

Figure 1

Publication	PECVD Reaction	Delta-n Control Method	Post-dep Thermal Treatment T° (°C)
Valette S., 1987	Unknown	P doping	Not specified
Valette S., 1988	Unknown	P doping	400°C
Grand G., 1990	Unknown	P doping	1000°C
Liu K., 1995	Unknown	Content in Si, P	Not specified
Ojha S., 1998	Unknown	Ge, B, or P doping	Not specified
Canning J., 1998	Unknown	Ge doping	Not specified
Bulla D., 1998	TEOS	TEOS	Not specified
Johnson C., 1998	$\text{SiH}_4 + \text{O}_2$	Si ion Implantation	400°C
Boswell R. W., 1997	$\text{SiH}_4 + \text{O}_2$	SiH_4/O_2 flow ratio	1000°C
Bazilenko M. V., 1995	$\text{SiH}_4 + \text{O}_2 + \text{CF}_4$	$(\text{SiH}_4 + \text{O}_2)/\text{CF}_4$ flow ratio	Not specified
Bazilenko M. V., 1996	$\text{SiH}_4 + \text{O}_2 + \text{CF}_4$	$(\text{SiH}_4 + \text{O}_2)/\text{CF}_4$ flow ratio	1000°C
Durandet A., 1996	$\text{SiH}_4 + \text{O}_2 + \text{CF}_4$	$\text{SiH}_4/\text{O}_2/\text{CF}_4$ flow ratio	100°C
Kapser K., 1991	$\text{SiH}_4 + \text{N}_2\text{O}$	$\text{SiH}_4/\text{N}_2\text{O}$ flow ratio	1060°C
Lai Q., 1992	$\text{SiH}_4 + \text{N}_2\text{O}$	$\text{SiH}_4/\text{N}_2\text{O}$ flow ratio	1100°C
Lai Q., 1993	$\text{SiH}_4 + \text{N}_2\text{O}$	$\text{SiH}_4/\text{N}_2\text{O}$ flow ratio	1100°C
Pereyra I., 1997	$\text{SiH}_4 + \text{N}_2\text{O}$	$\text{SiH}_4/\text{N}_2\text{O}$ flow ratio	400°C
Alayo M., 1998	$\text{SiH}_4 + \text{N}_2\text{O}$	$\text{SiH}_4/\text{N}_2\text{O}$ flow ratio	1000°C
Kenyon T., 1997	$\text{SiH}_4 + \text{N}_2\text{O} + \text{Ar}$	$\text{SiH}_4/\text{N}_2\text{O}/\text{Ar}$ flow ratio	1000°C
Lam D. K. W., 1984	$\text{SiH}_4 + \text{N}_2\text{O} + \text{NH}_3$	$\text{SiH}_4/\text{N}_2\text{O}/\text{NH}_3$ flow ratio	Not specified
Bruno F., 1991	$\text{SiH}_4 + \text{N}_2\text{O} + \text{NH}_3$	$\text{SiH}_4/\text{N}_2\text{O}/\text{NH}_3$ flow ratio	1100°C
Yokohama S., 1995	$\text{SiH}_4 + \text{N}_2\text{O} + \text{NH}_3$	$\text{SiH}_4/\text{N}_2\text{O}/\text{NH}_3$ flow ratio	Not specified
Agnihotri O. P., 1997	$\text{SiH}_4 + \text{N}_2\text{O} + \text{NH}_3$	$\text{SiH}_4/\text{N}_2\text{O}/\text{NH}_3$ flow ratio	700-900°C
Germann R., 1999	$\text{SiH}_4 + \text{N}_2\text{O} + \text{NH}_3$	Unknown	1100°C
Offrein B., 1999	$\text{SiH}_4 + \text{N}_2\text{O} + \text{NH}_3$	Unknown	1150°C
Hoffmann M., 1995	$\text{SiH}_4 + \text{N}_2\text{O} + \text{NH}_3 + \text{Ar}$	$\text{SiH}_4/\text{N}_2\text{O}/\text{NH}_3/\text{Ar}$ flow ratio	Not specified
Hoffmann M., 1997	$\text{SiH}_4 + \text{N}_2\text{O} + \text{NH}_3 + \text{Ar}$	$\text{SiH}_4/\text{N}_2\text{O}/\text{NH}_3/\text{Ar}$ flow ratio	Not specified
Tu Y., 1995	$\text{SiH}_4 + \text{N}_2\text{O} + \text{NH}_3 + \text{N}_2$	$\text{N}_2\text{O}/(\text{N}_2\text{O} + \text{NH}_3)$ flow ratio	1050°C
Poenar D., 1997	$\text{SiH}_4 + \text{N}_2\text{O} + \text{NH}_3 + \text{N}_2$	$\text{SiH}_4/\text{N}_2\text{O}/\text{NH}_3/\text{N}_2$ flow ratio	850°C
Ridder R., 1998	$\text{SiH}_4 + \text{N}_2\text{O} + \text{NH}_3 + \text{N}_2$	$\text{SiH}_4/\text{N}_2\text{O}/\text{NH}_3/\text{Ar}$ flow ratio	1100°C
Worhoff K., 1999	$\text{SiH}_4 + \text{N}_2\text{O} + \text{NH}_3 + \text{N}_2$	$\text{SiH}_4/\text{N}_2\text{O}/\text{NH}_3/\text{N}_2$ flow ratio	1150°C
Bulat E.S., 1993	$\text{SiH}_4 + \text{N}_2\text{O} + \text{N}_2 + \text{O}_2 + \text{He} + \text{CF}_4$	$\text{SiH}_4/(\text{N}_2\text{O}/\text{N}_2)/\text{O}_2/\text{CF}_4$ flow ratio	425°C
This Patent Application	$\text{SiH}_4 + \text{N}_2\text{O} + \text{PH}_3 + \text{N}_2$	Patented Pending Method	650°C

Figure 2

	H-O-H	S-O-H	S-N-H	S-H-N	S-H	S=O	N=N	S-O-S	S-O-S	S-O-N	S-O-H	S-O-S	S-O-S
Min	3550	3470	3380	3300	2210	1800	1530	1080	1000	910	860	740	410
Ave	3650	3510	3420	3380	2260	1875	1555	1180	1080	950	885	810	460
Max	3750	3550	3460	3460	2310	1950	1580	1280	1160	990	910	880	510
Min	2.817	2.882	2.959	3.030	4.525	5.556	6.536	9.259	10.000	10.989	11.628	13.514	24.390
Ave	2.740	2.849	2.924	2.959	4.425	5.333	6.431	8.475	9.259	10.526	11.299	12.346	21.739
Max	2.667	2.817	2.890	2.890	4.329	5.128	6.329	7.813	8.621	10.101	10.989	11.364	19.608
Min	1.408	1.441	1.479	1.515	2.262	2.778	3.268	4.630	5.000	5.495	5.814	6.757	12.195
Ave	1.370	1.425	1.462	1.479	2.212	2.667	3.215	4.237	4.630	5.263	5.650	6.173	10.870
Max	1.333	1.408	1.445	1.445	2.165	2.564	3.165	3.906	4.310	5.051	5.495	5.682	9.804
Min	0.939	0.961	0.986	1.010	1.508	1.852	2.179	3.086	3.333	3.663	3.876	4.505	8.130
Ave	0.913	0.950	0.975	0.986	1.475	1.778	2.144	2.825	3.086	3.509	3.766	4.115	7.246
Max	0.889	0.939	0.963	0.963	1.443	1.709	2.110	2.604	2.874	3.367	3.663	3.788	6.536
Min	0.704	0.720	0.740	0.758	1.131	1.389	1.634	2.315	2.500	2.747	2.907	3.378	6.098
Ave	0.685	0.712	0.731	0.740	1.106	1.333	1.608	2.119	2.315	2.632	2.825	3.086	5.435
Max	0.667	0.704	0.723	0.723	1.082	1.282	1.582	1.953	2.155	2.525	2.747	2.841	4.902
Min	0.563	0.576	0.592	0.606	0.905	1.111	1.307	1.852	2.000	2.198	2.326	2.703	4.878
Ave	0.548	0.570	0.585	0.592	0.885	1.067	1.286	1.695	1.852	2.105	2.260	2.469	4.348
Max	0.533	0.563	0.578	0.578	0.866	1.026	1.266	1.563	1.724	2.020	2.198	2.273	3.922
Min	0.469	0.480	0.493	0.505	0.754	0.926	1.089	1.543	1.667	1.832	1.938	2.252	4.065
Ave	0.457	0.475	0.487	0.493	0.737	0.889	1.072	1.412	1.543	1.754	1.883	2.058	3.623
Max	0.444	0.469	0.482	0.482	0.722	0.855	1.055	1.302	1.437	1.684	1.832	1.894	3.268
Min	0.402	0.412	0.423	0.433	0.646	0.794	0.934	1.323	1.429	1.570	1.661	1.931	3.484
Ave	0.391	0.407	0.418	0.423	0.632	0.762	0.919	1.211	1.323	1.504	1.614	1.764	3.106
Max	0.381	0.402	0.413	0.413	0.618	0.733	0.904	1.116	1.232	1.443	1.570	1.623	2.801
Min	0.352	0.360	0.370	0.379	0.566	0.694	0.817	1.157	1.250	1.374	1.453	1.689	3.049
Ave	0.342	0.356	0.365	0.370	0.553	0.667	0.804	1.059	1.157	1.316	1.412	1.543	2.717
Max	0.333	0.352	0.361	0.361	0.541	0.641	0.791	0.977	1.078	1.263	1.374	1.420	2.451

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Figure 3a

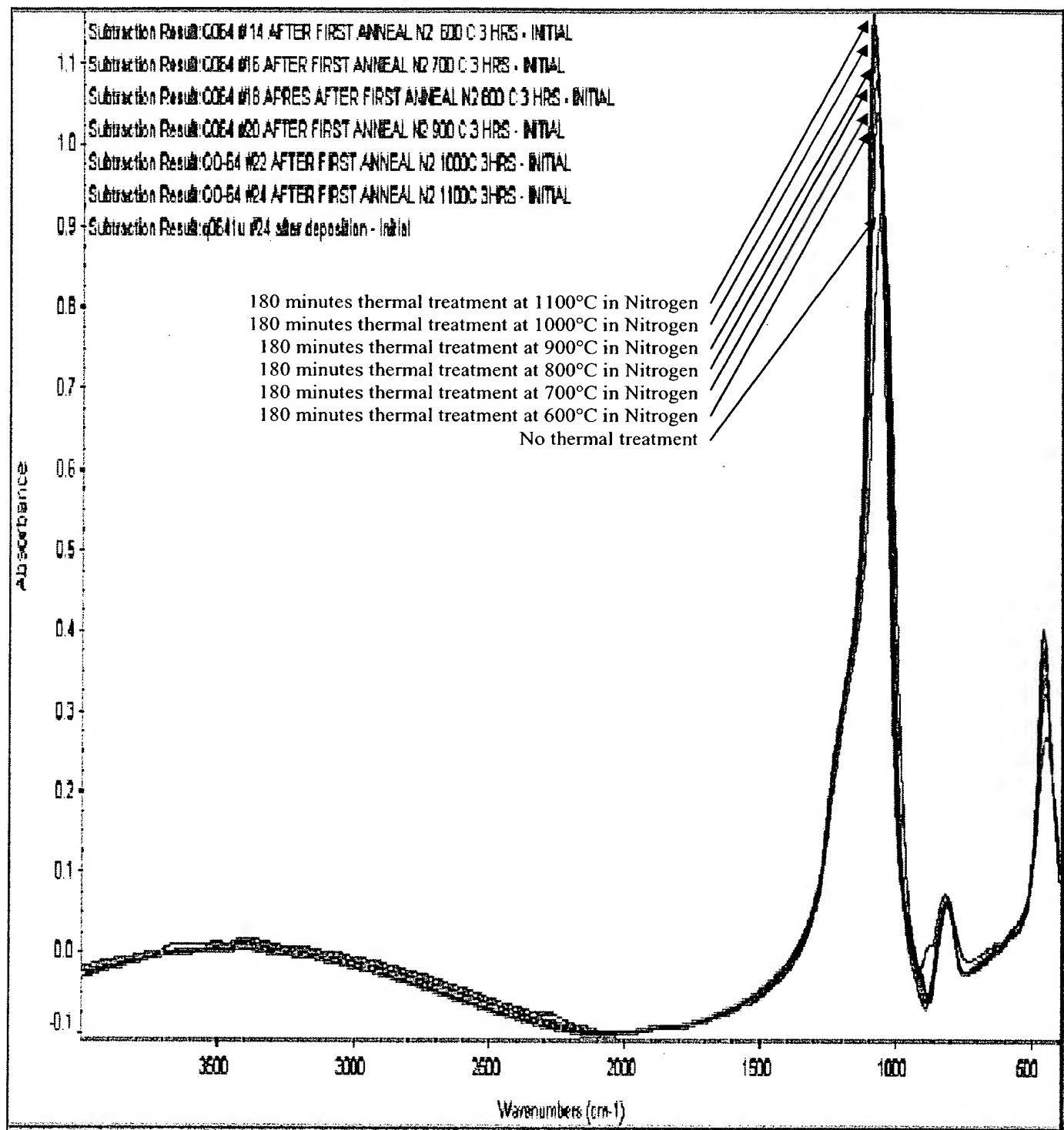


Figure 3b

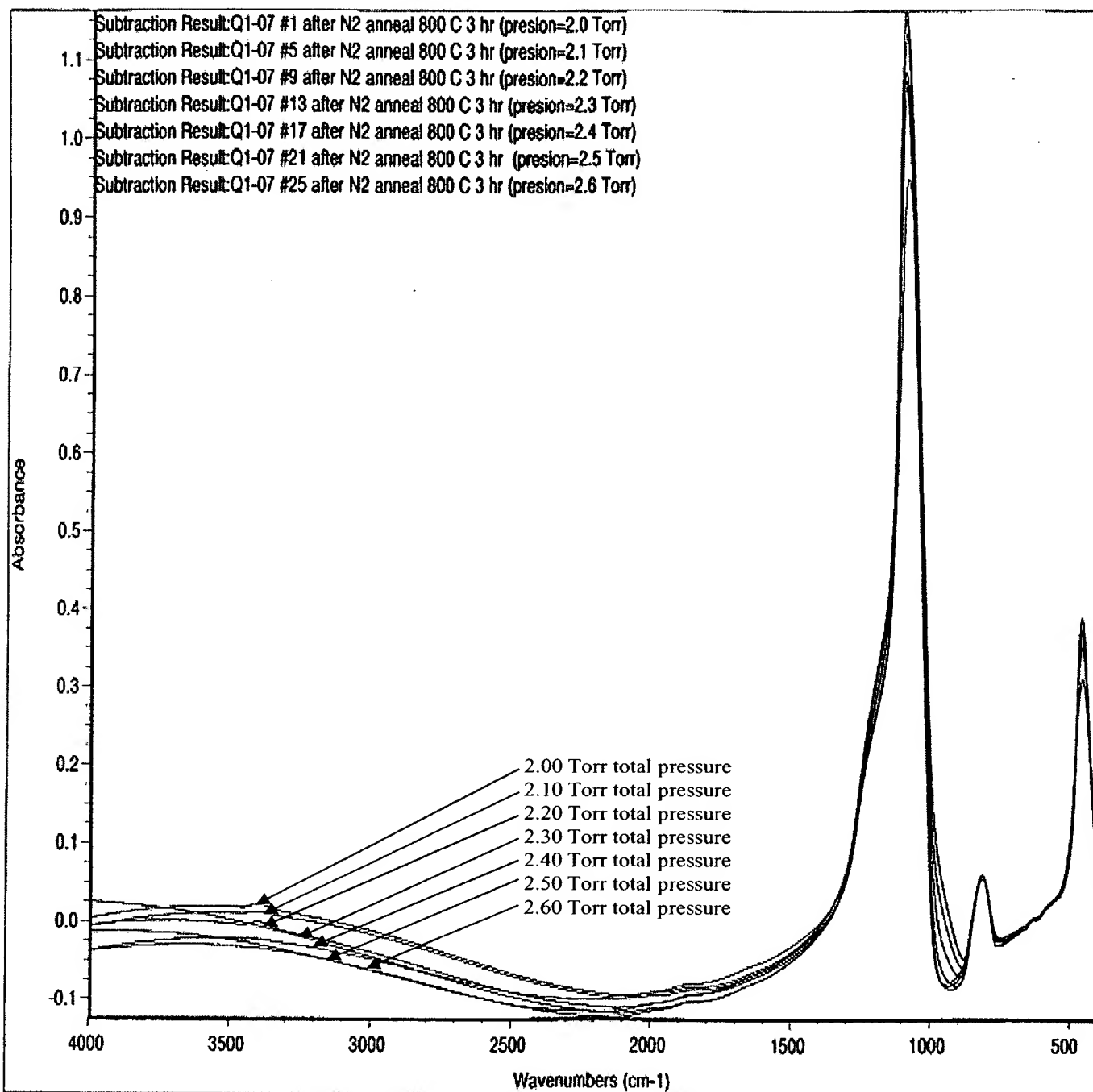


Figure 3c

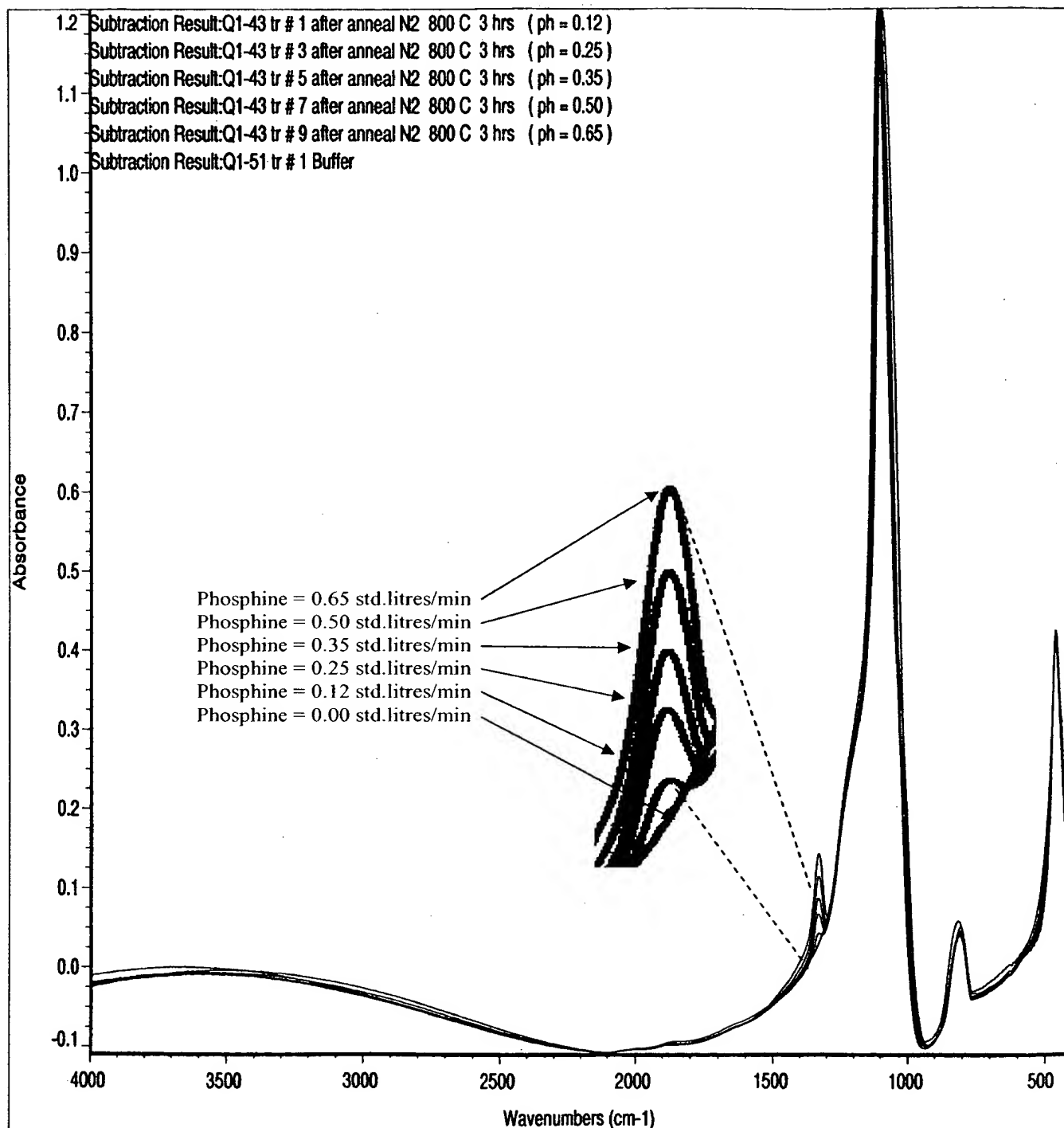
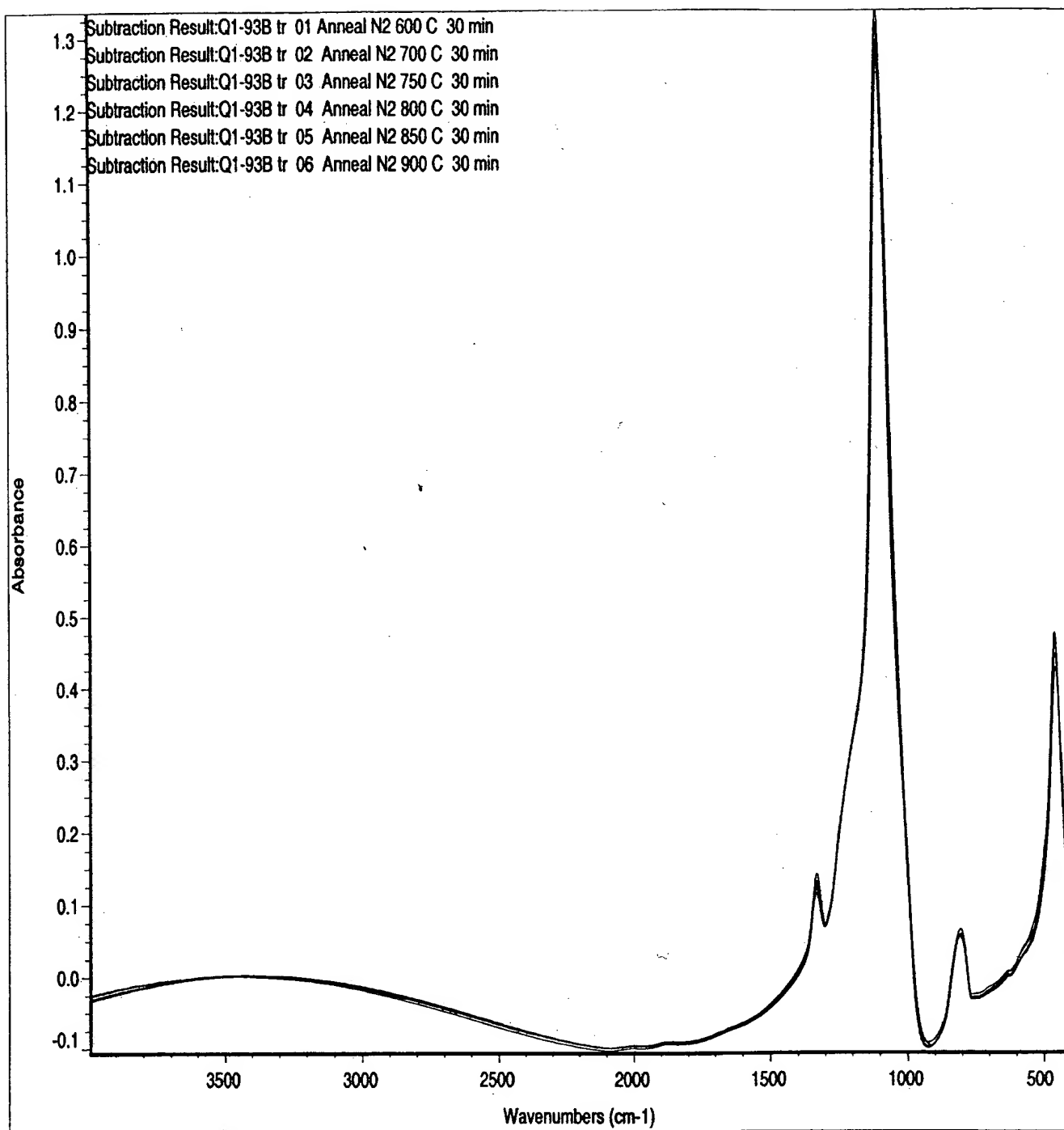


Figure 3d



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Figure 4a

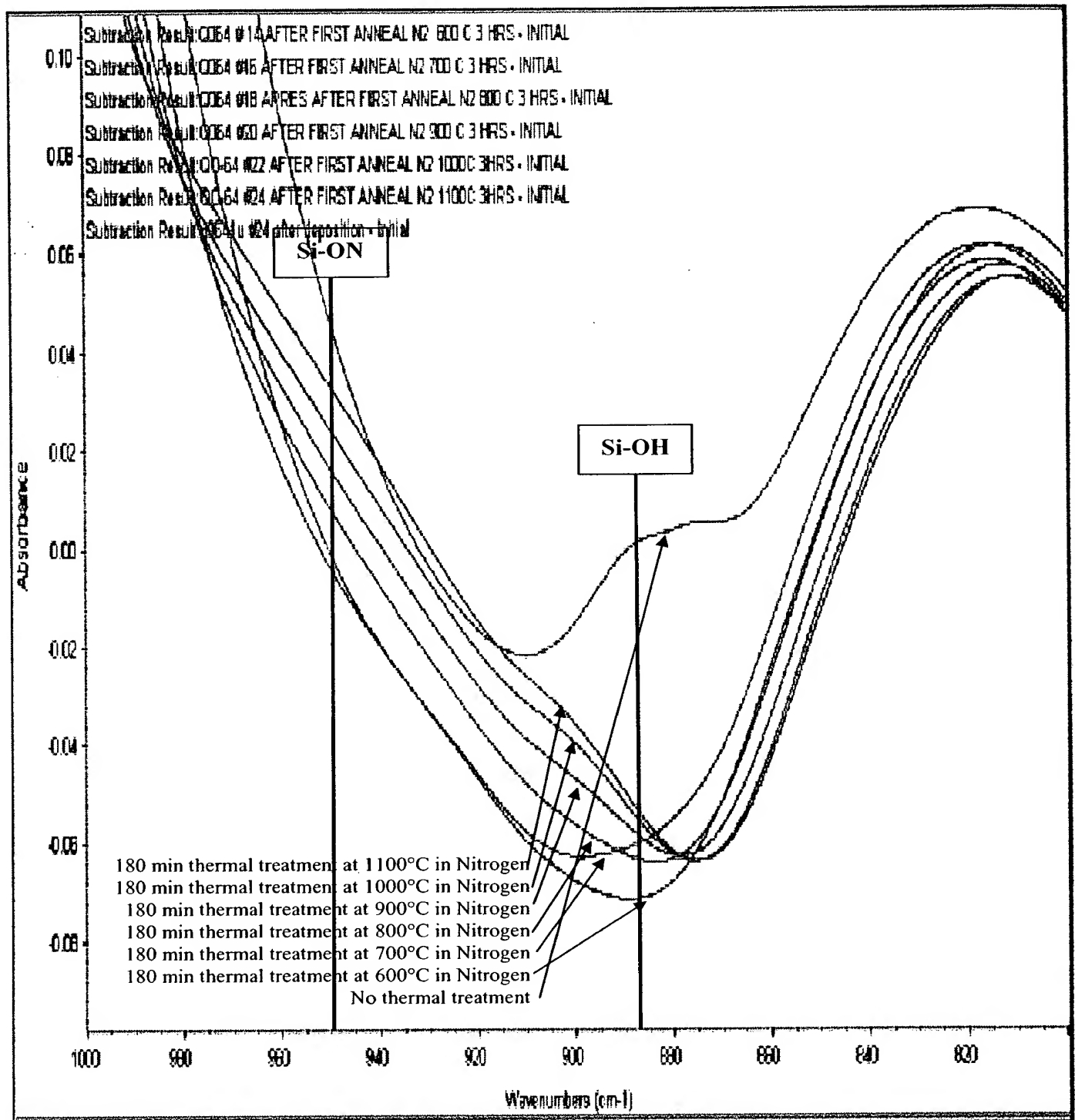


Figure 4b

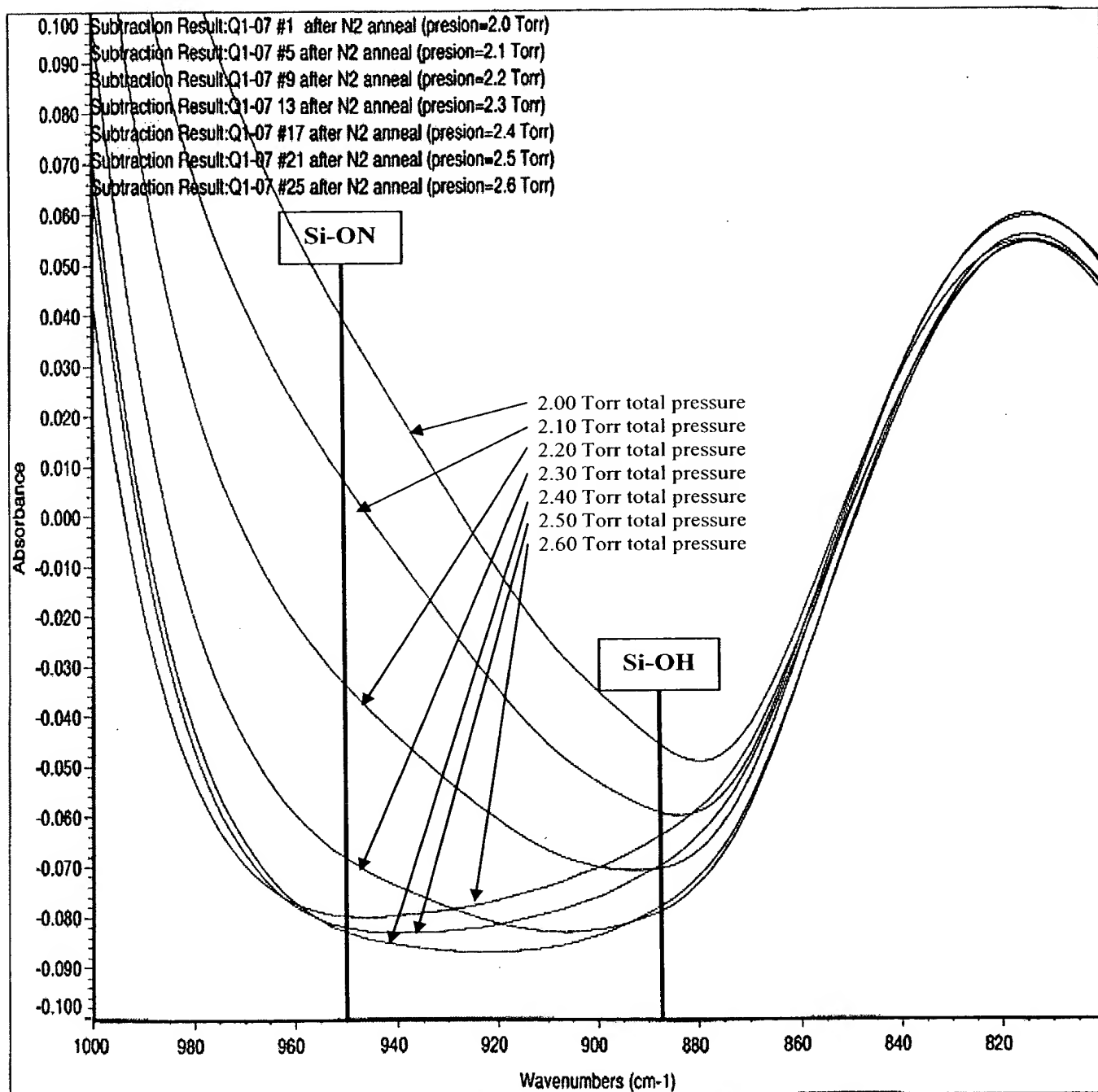


Figure 4c

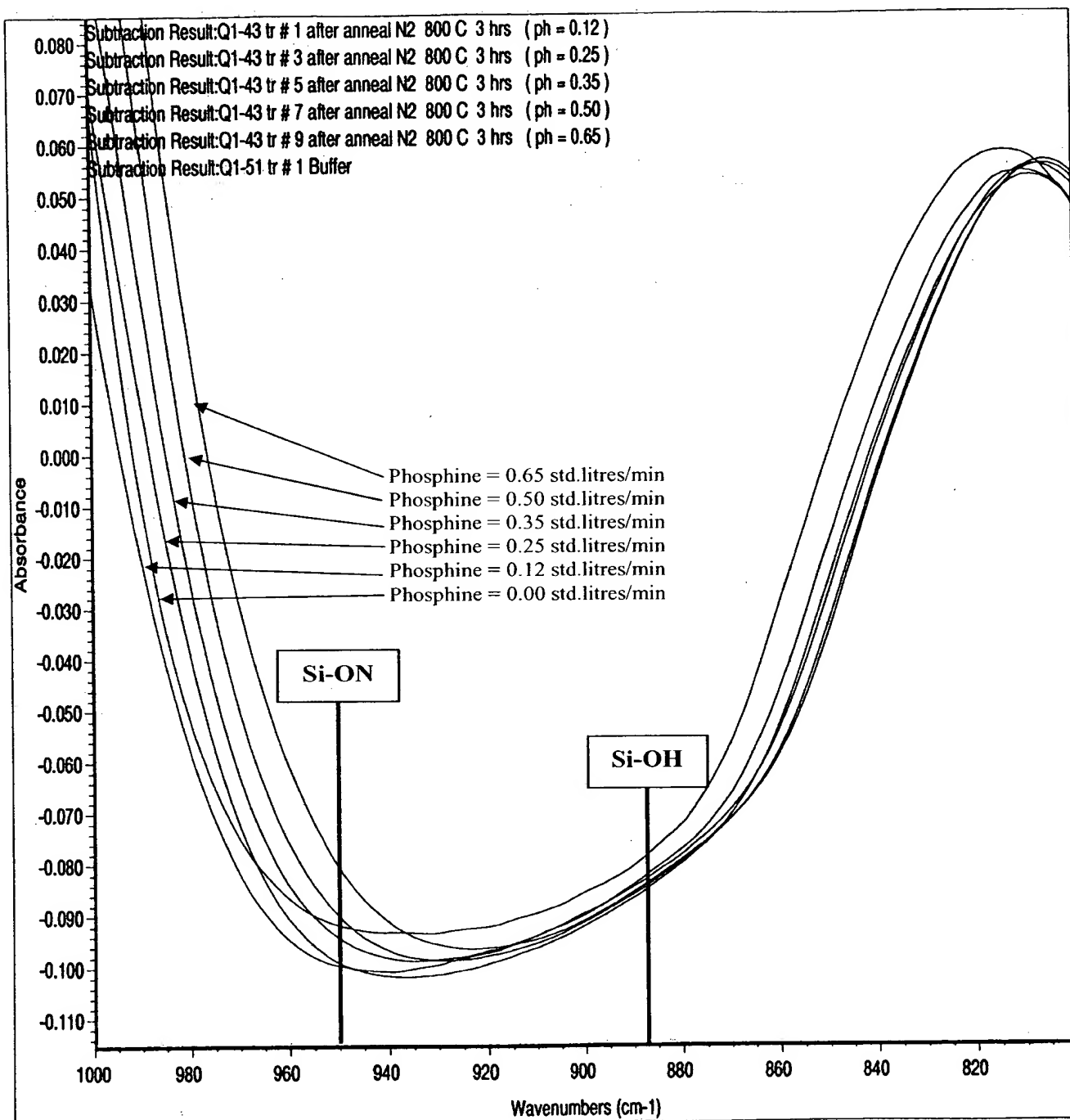


Figure 4d

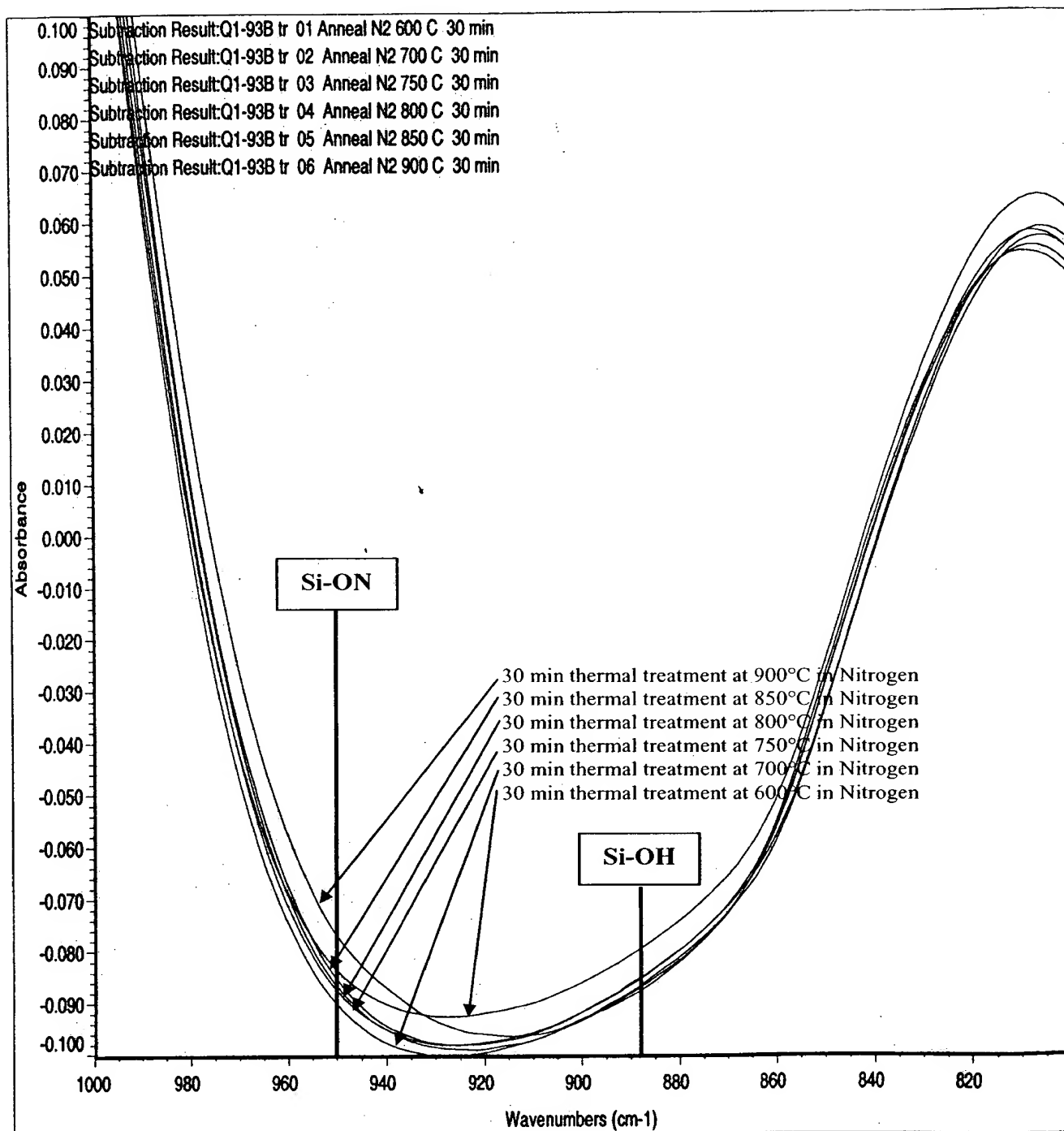
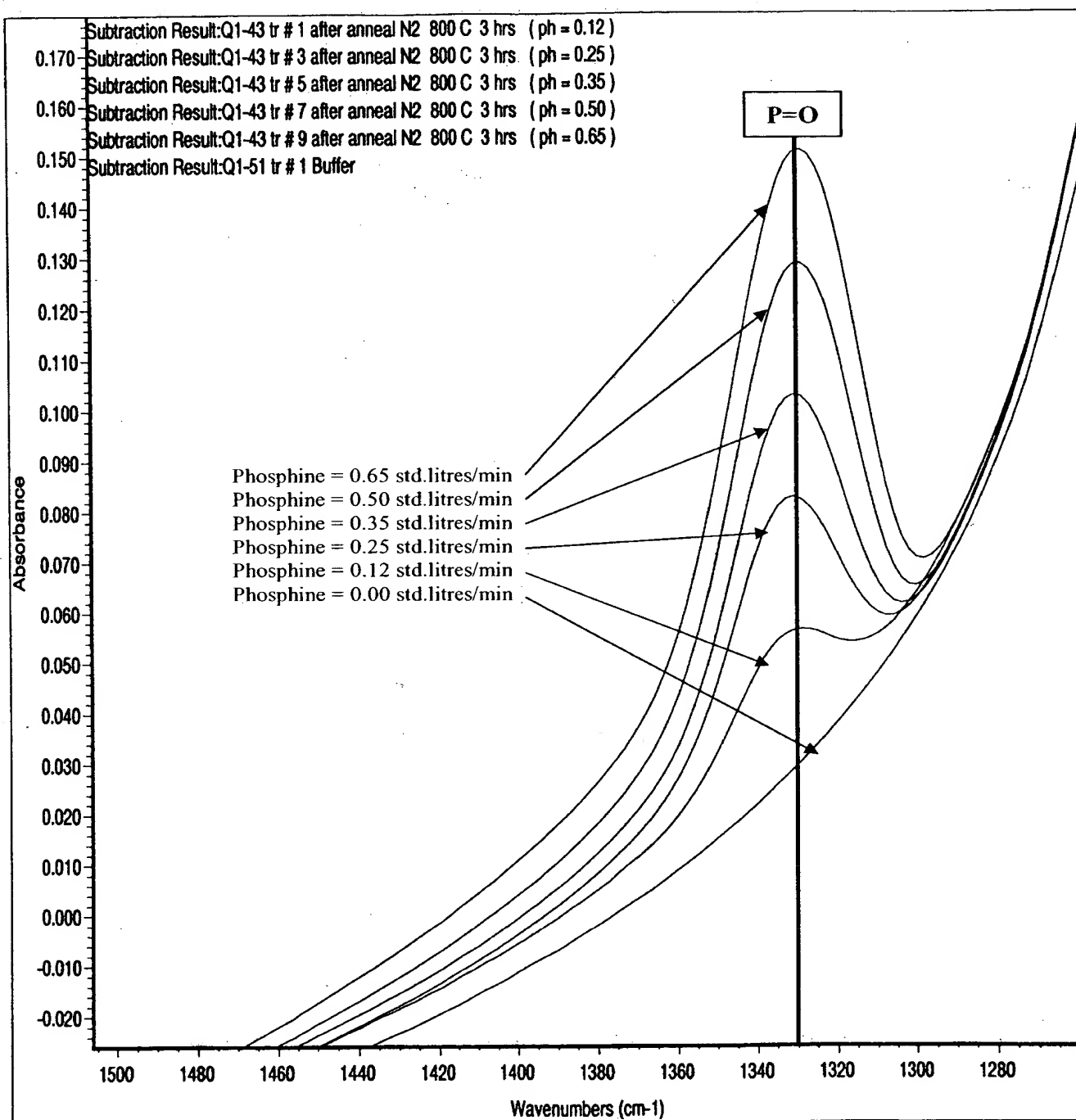
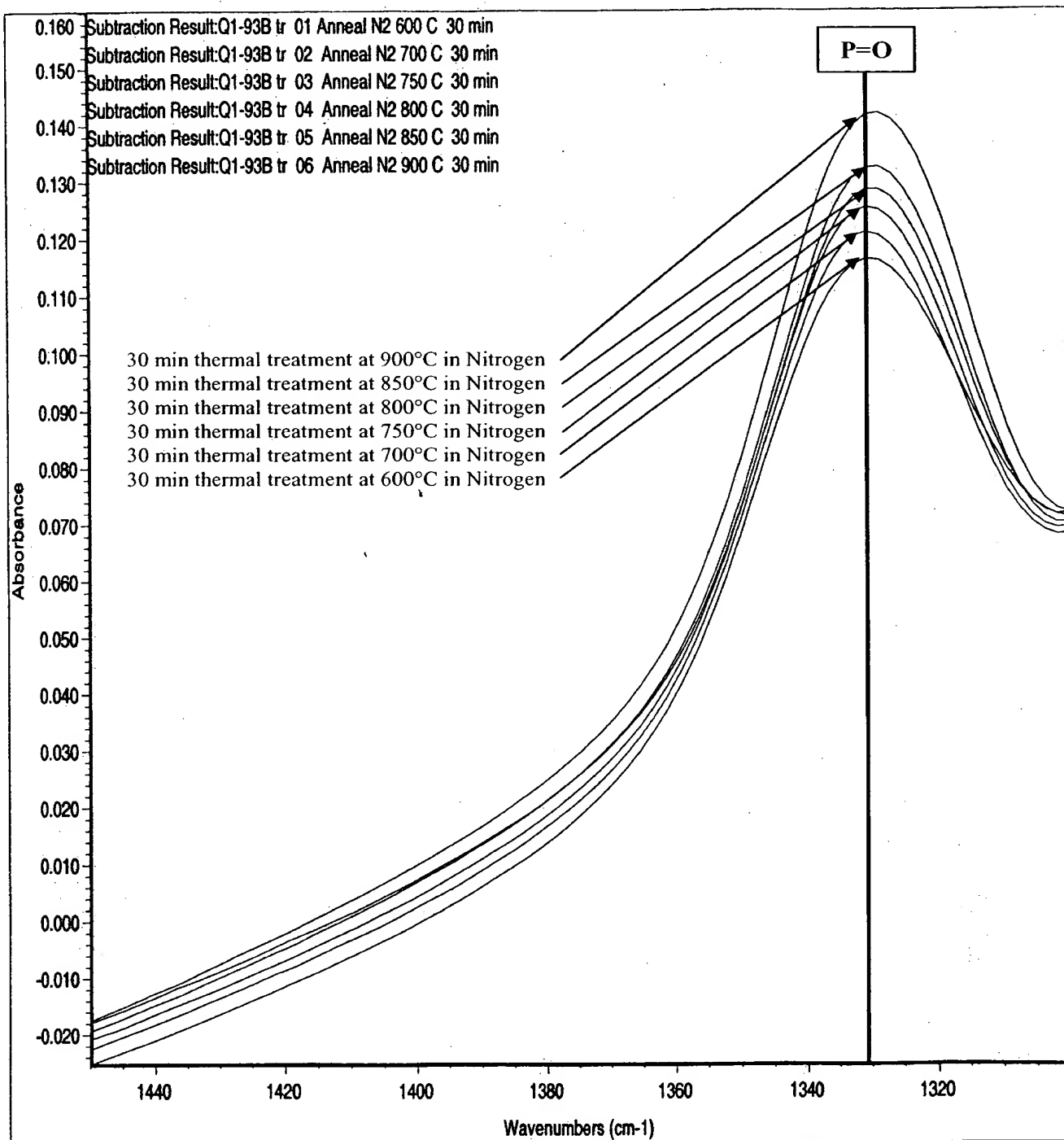


Figure 5c



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Figure 5d



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Figure 6a

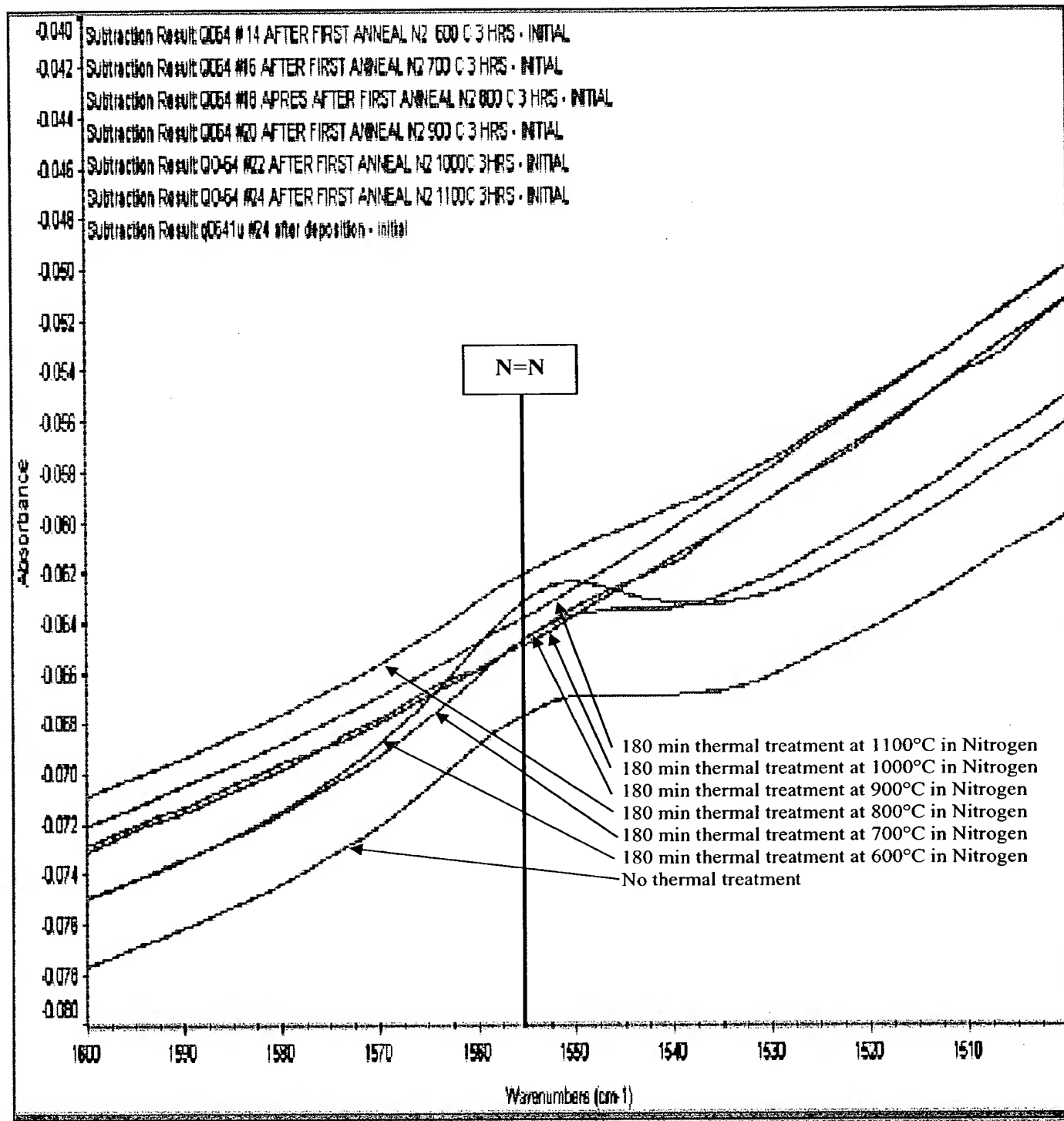


Figure 6b

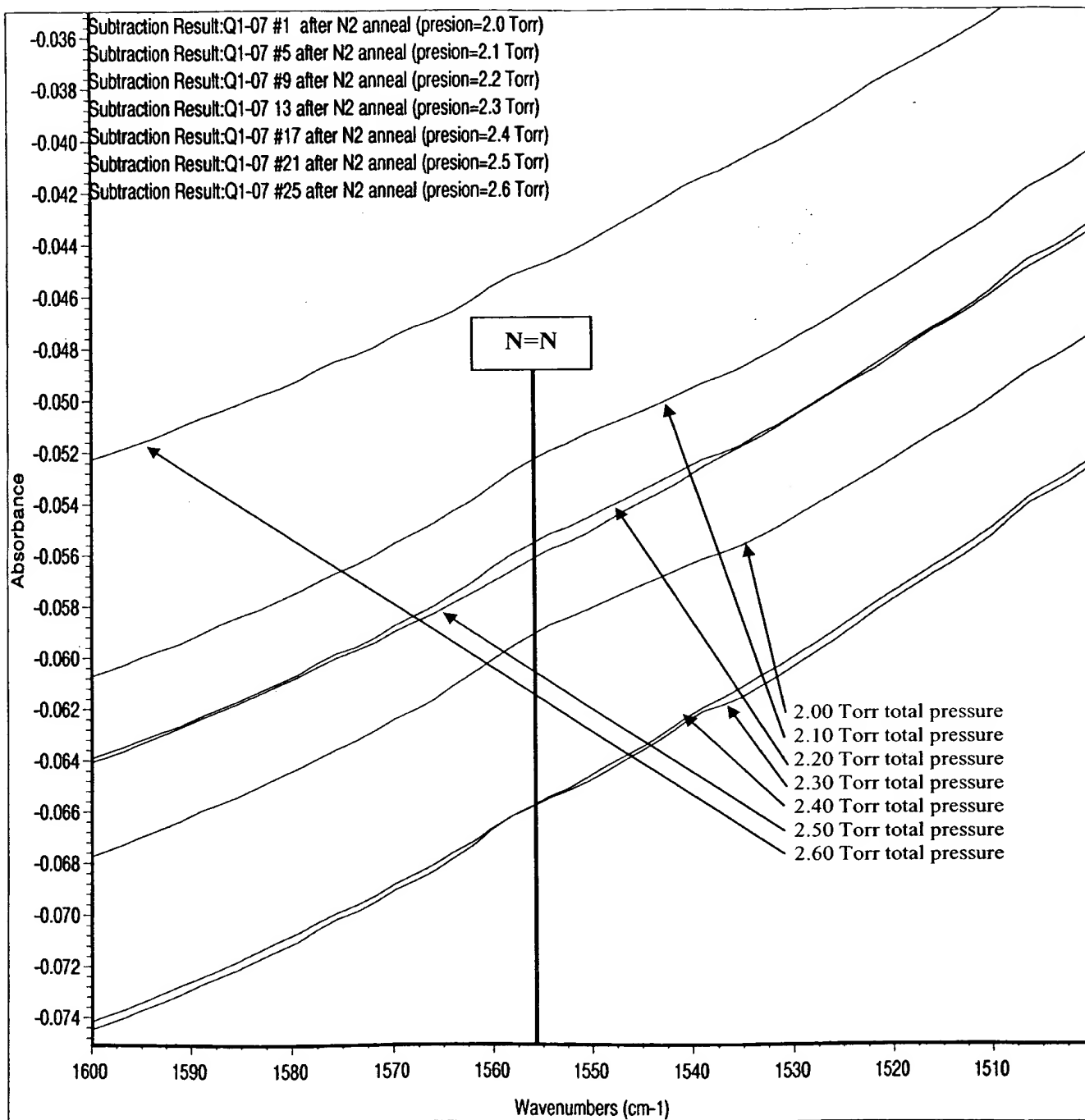
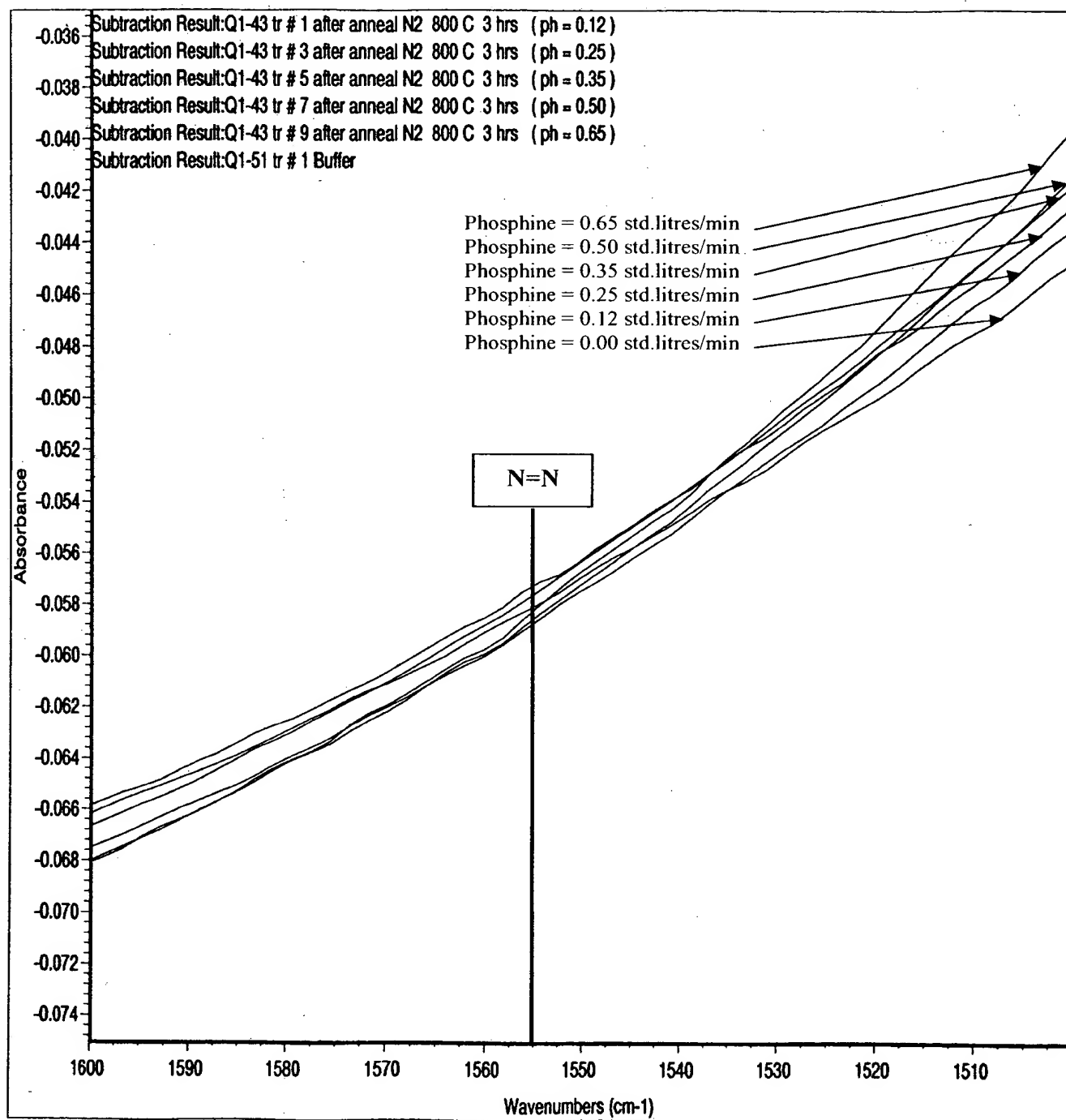


Figure 6c



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Figure 6d

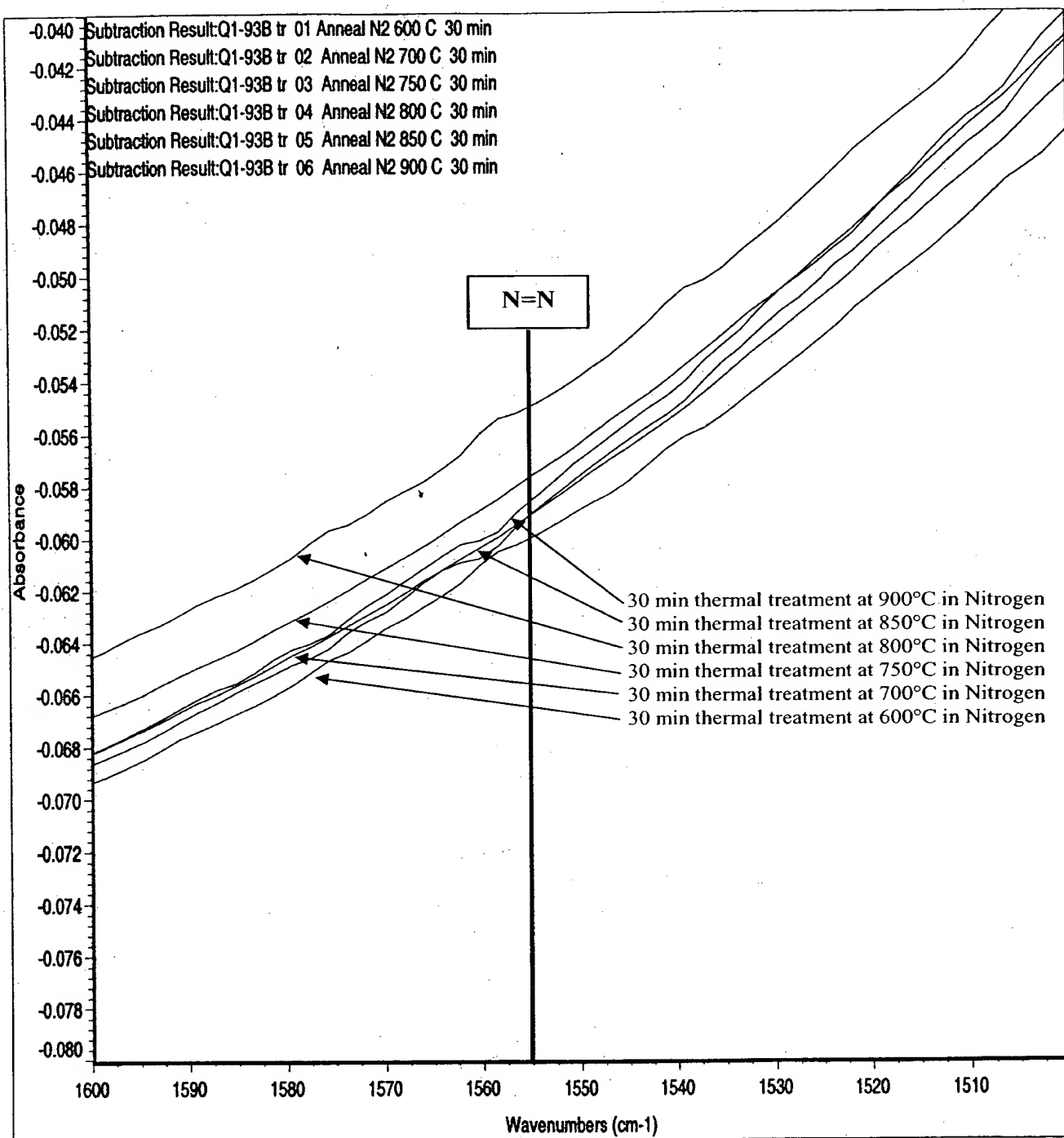


Figure 7a

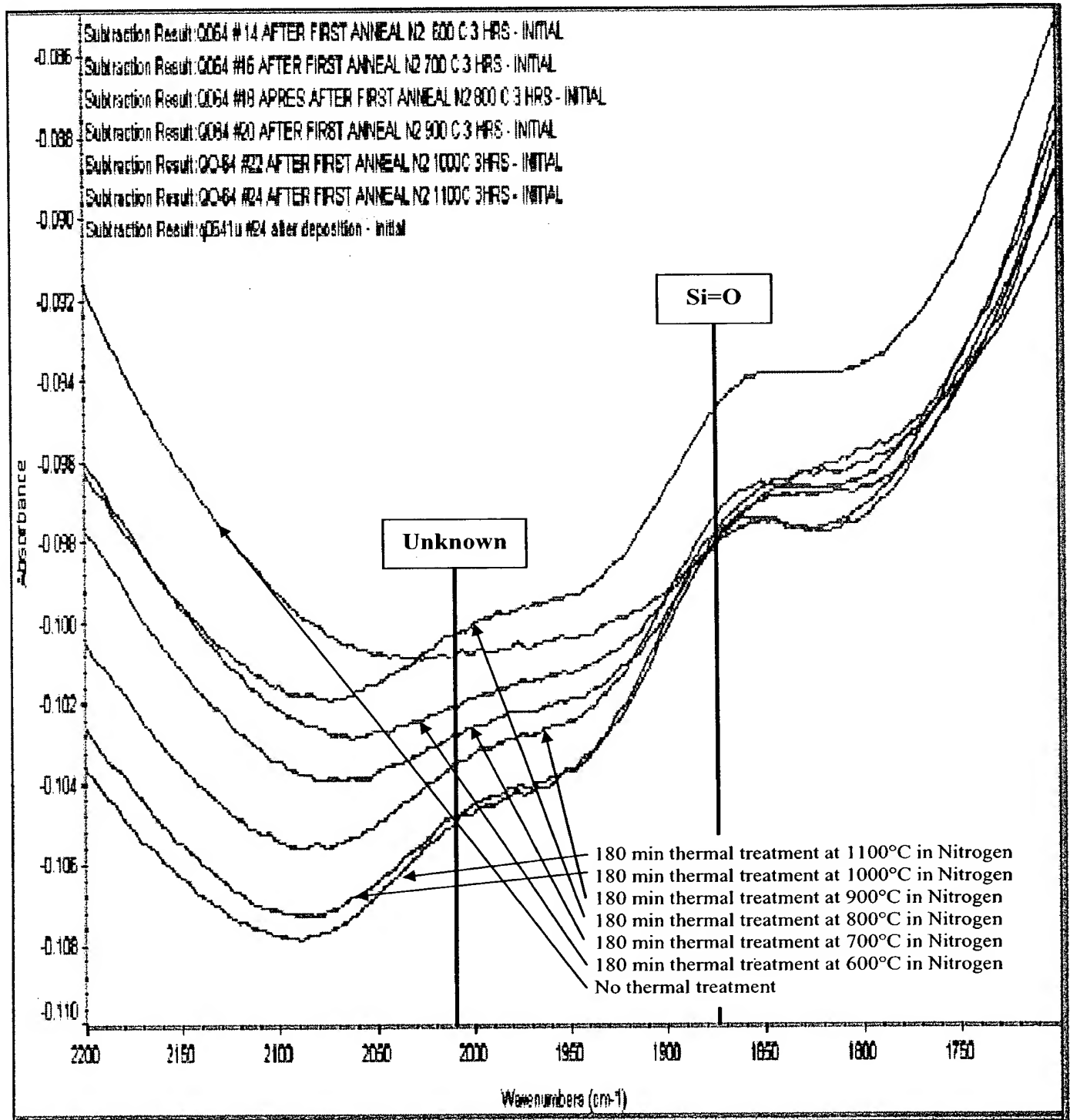


Figure 7b

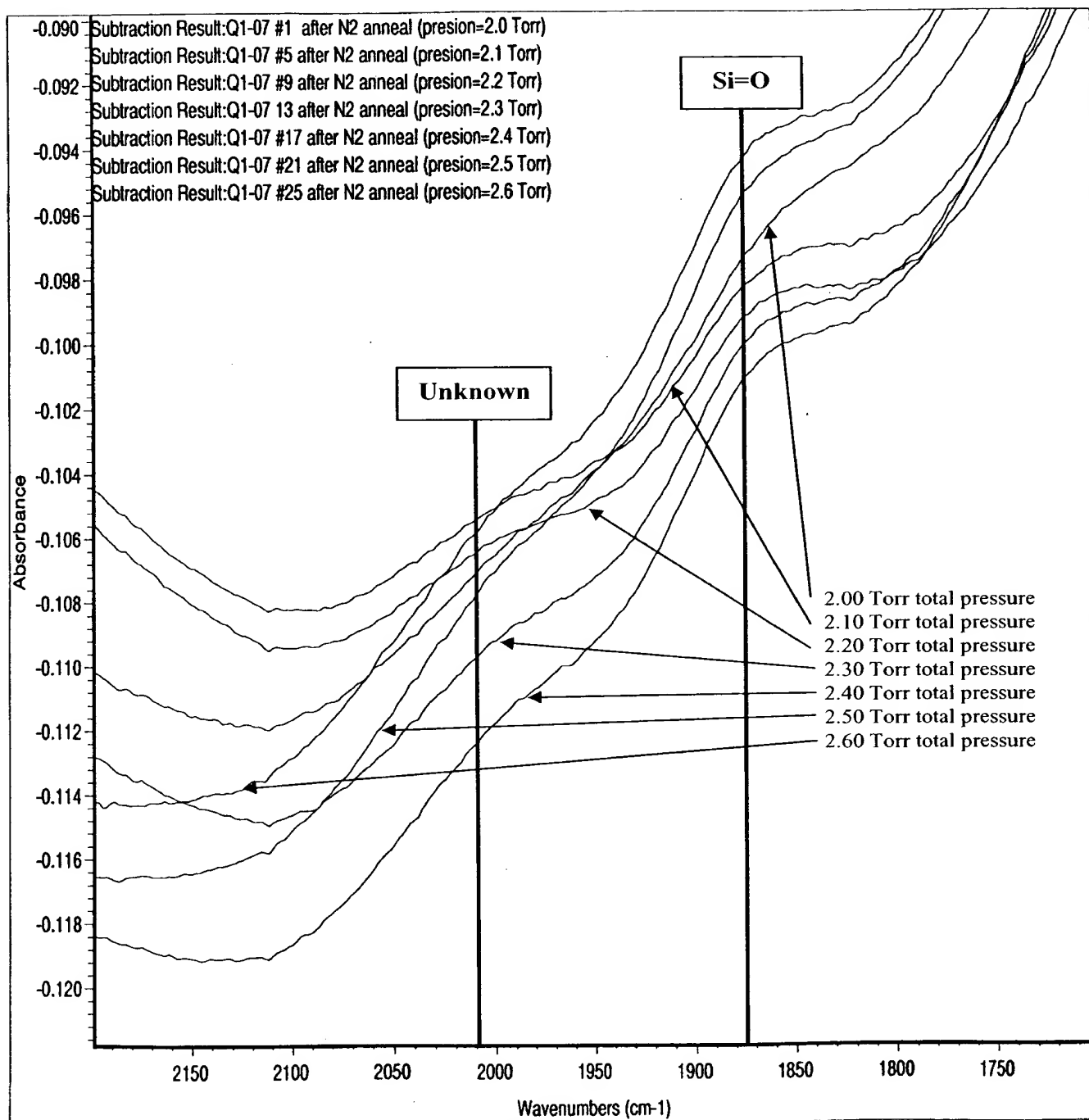


Figure 7c

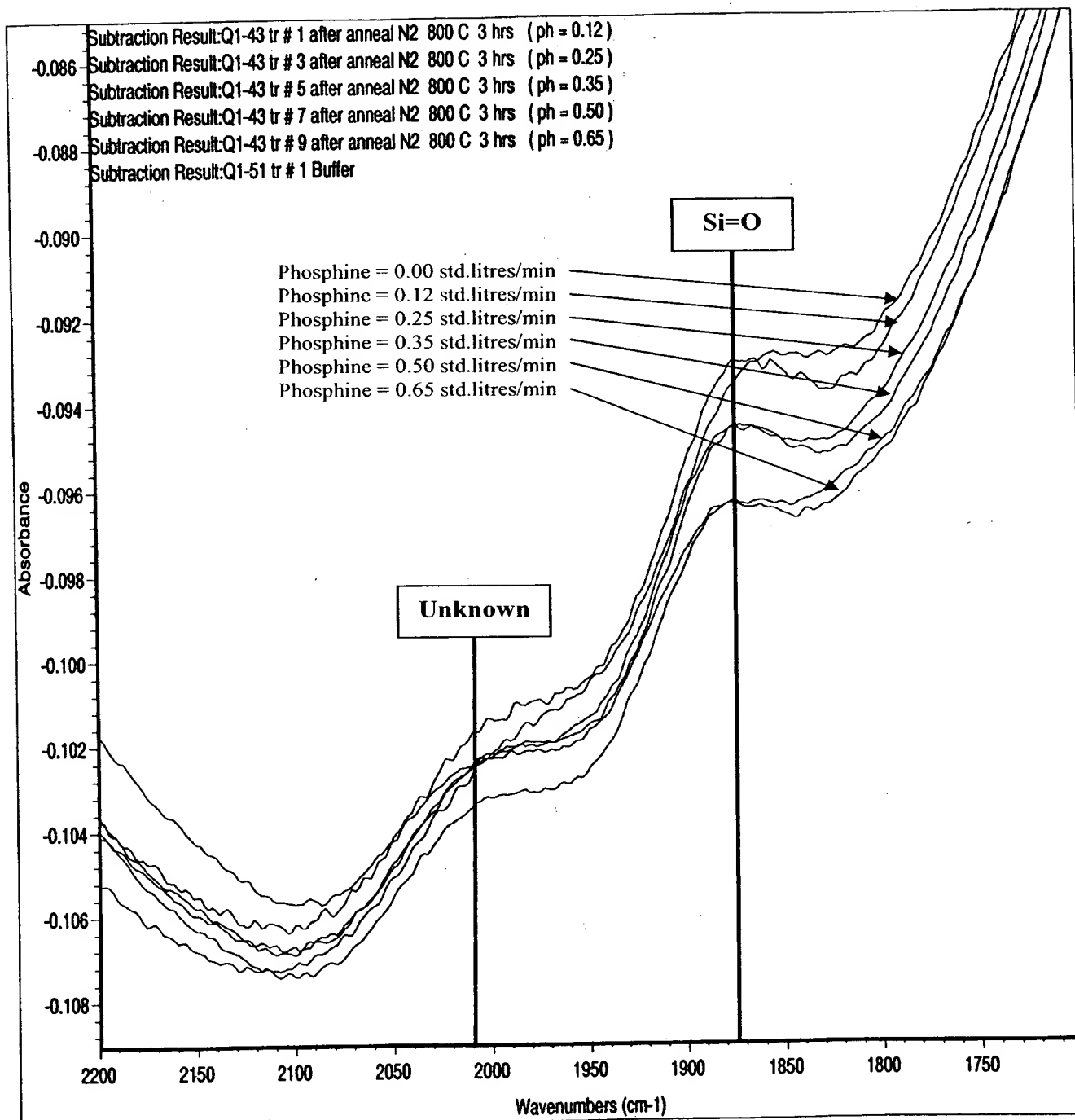
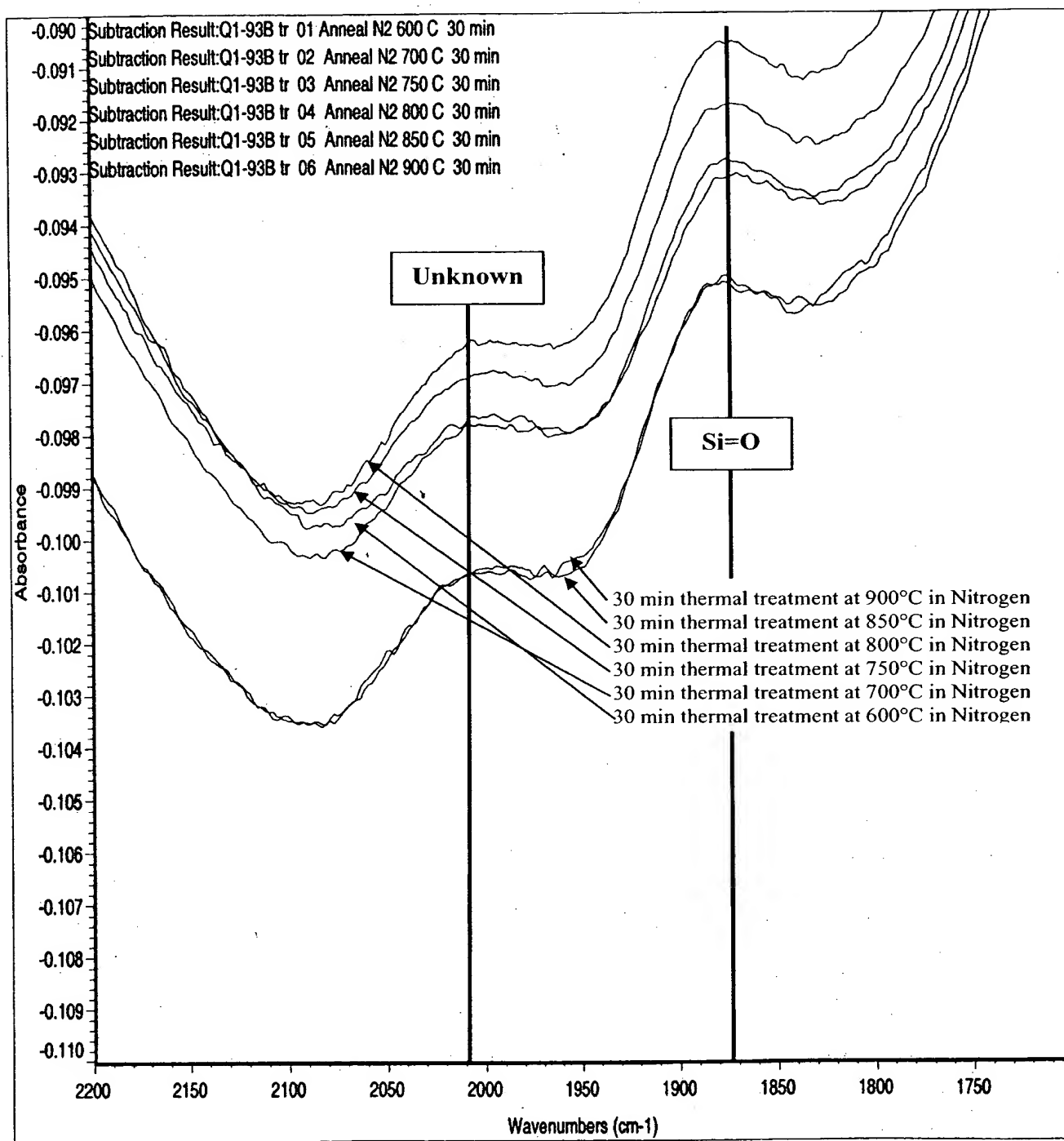


Figure 7d



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Figure 8a

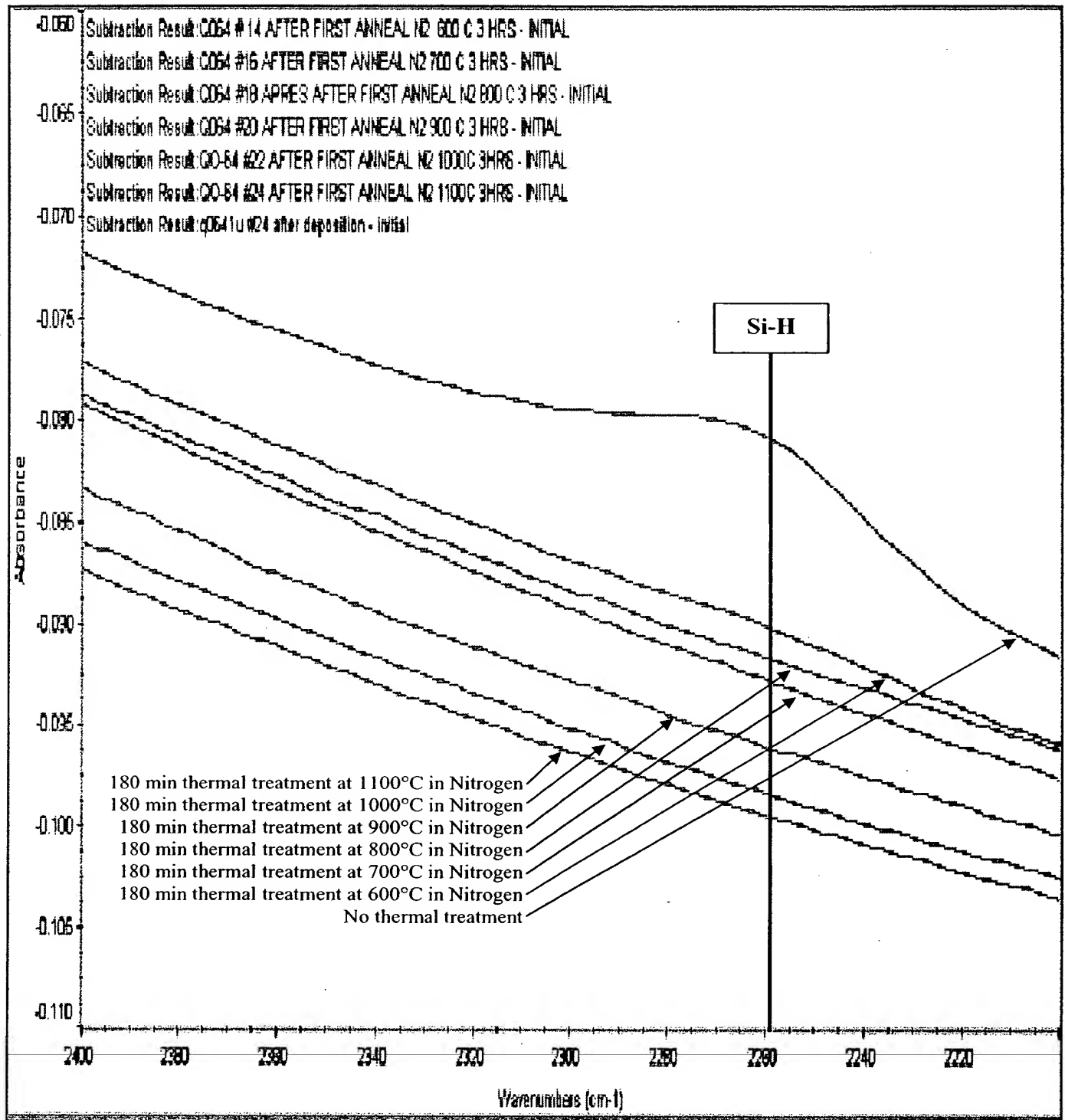


Figure 8b

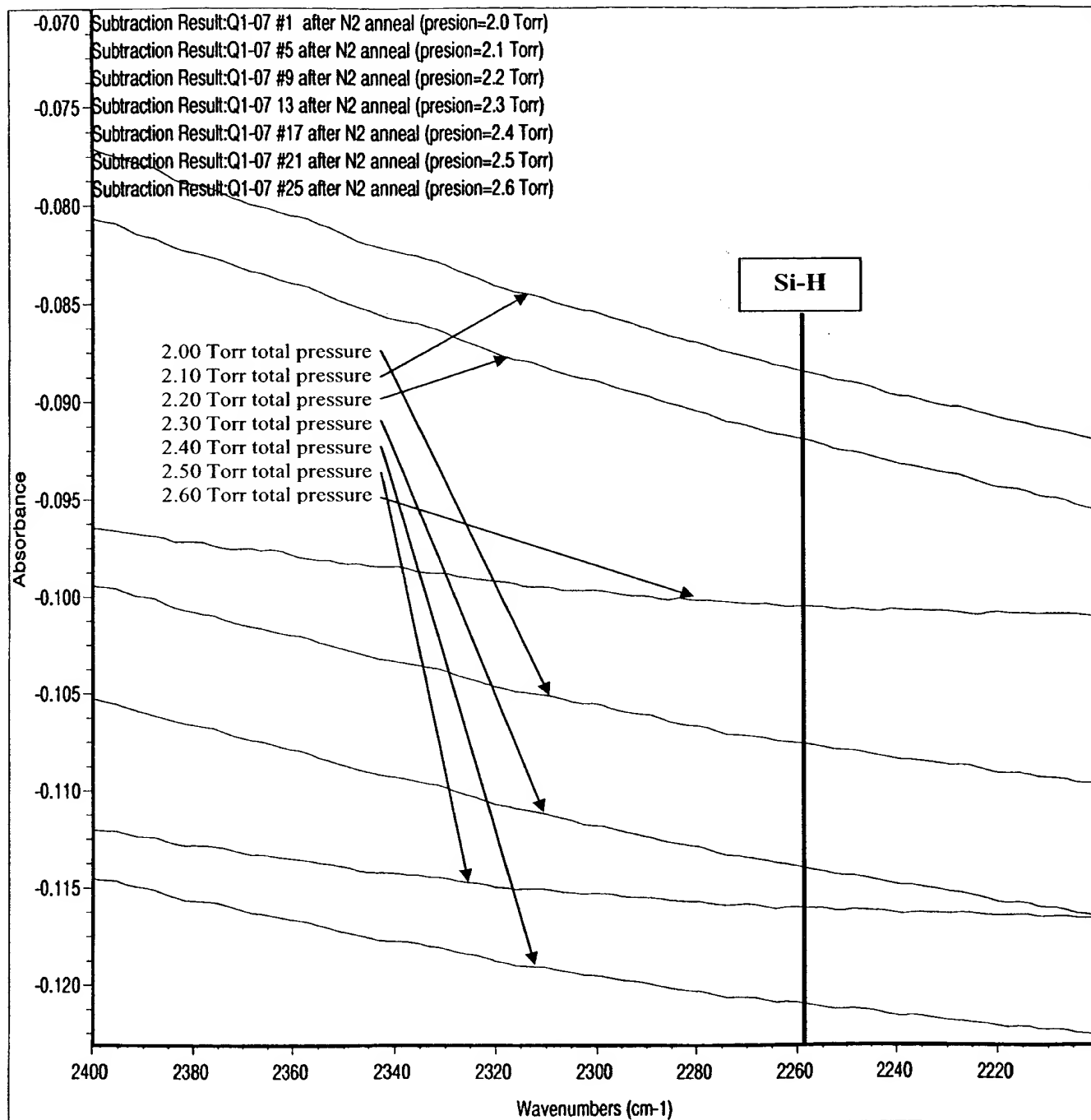
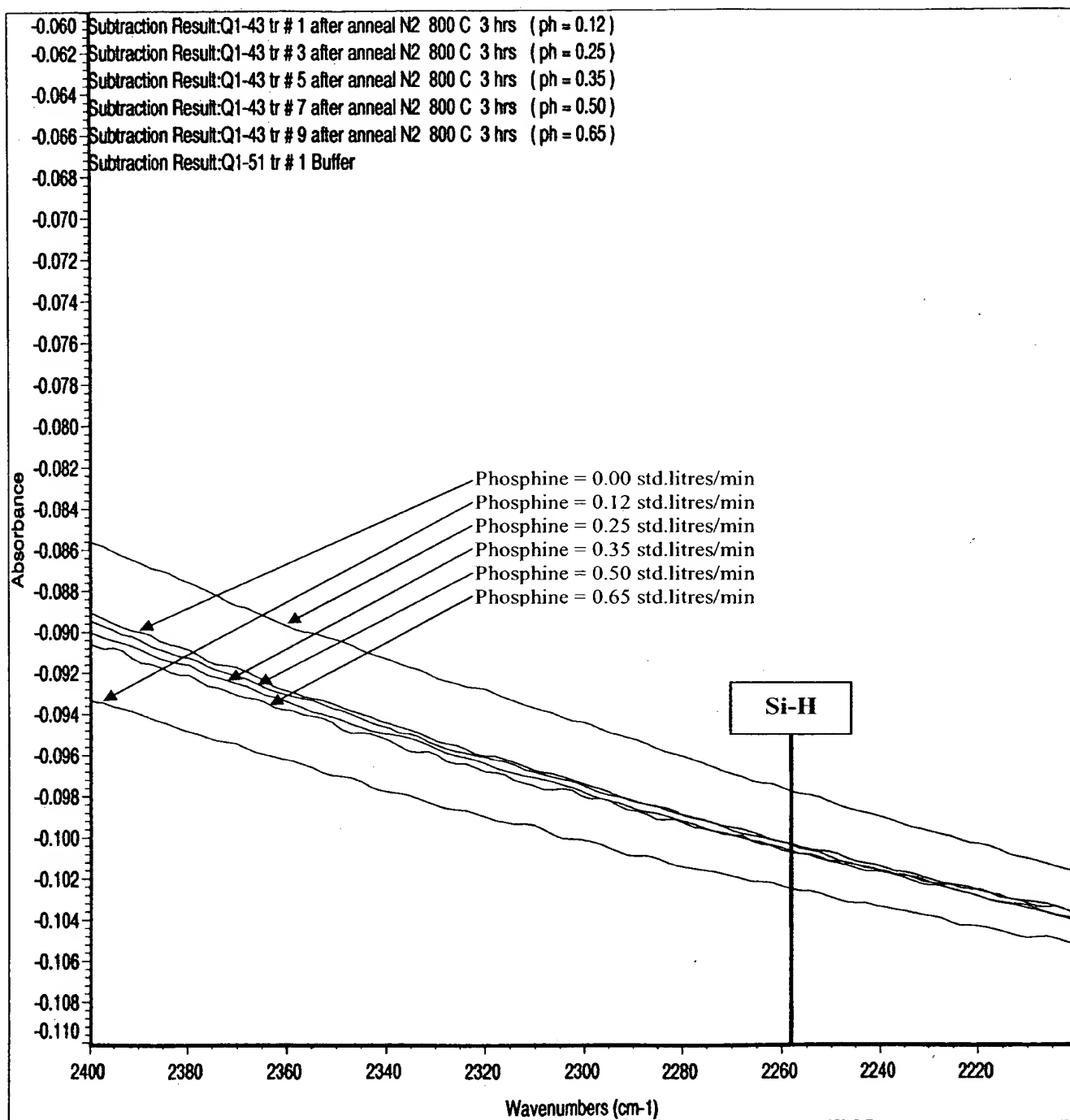


Figure 8c



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Figure 8d

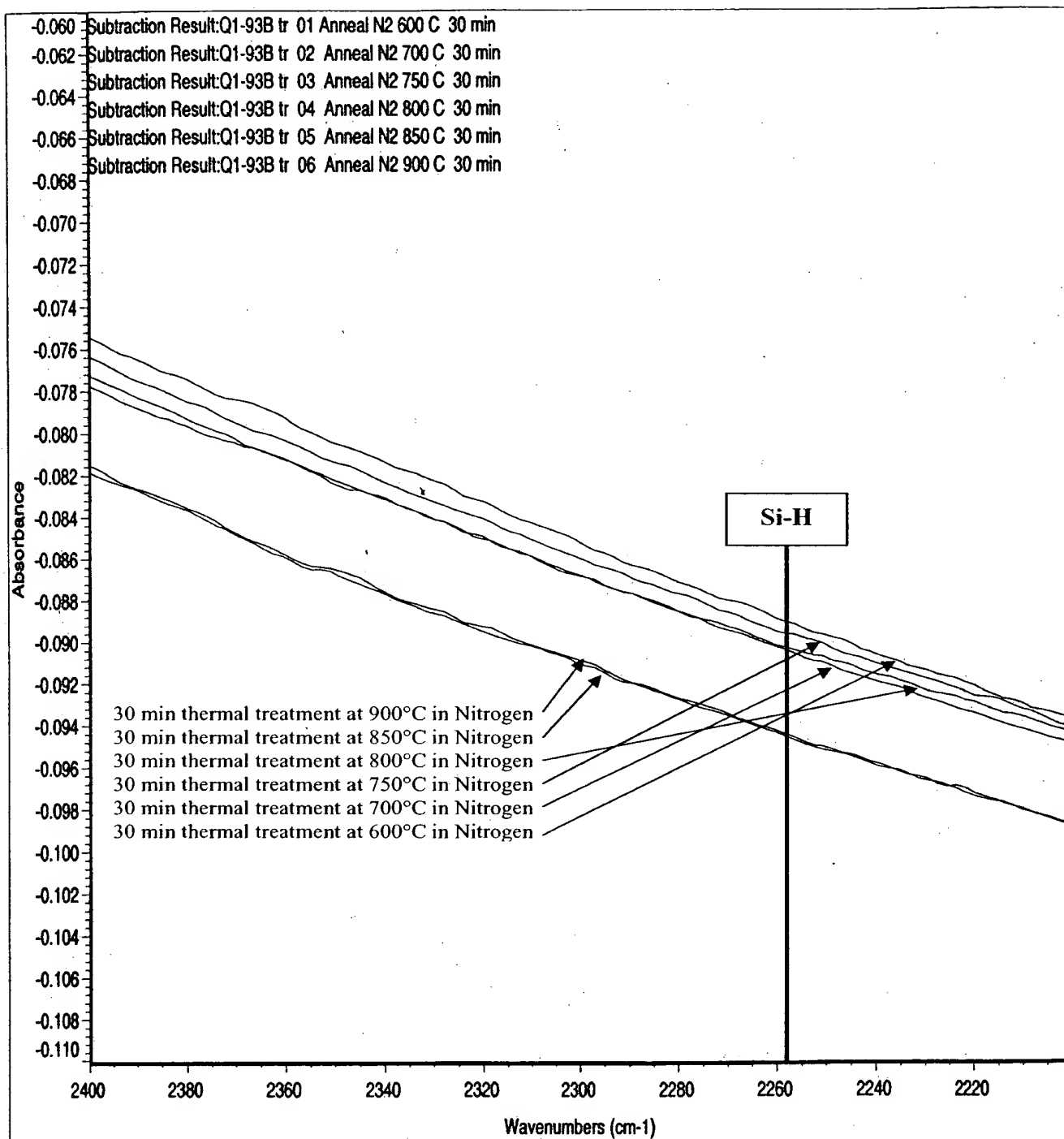


Figure 9a

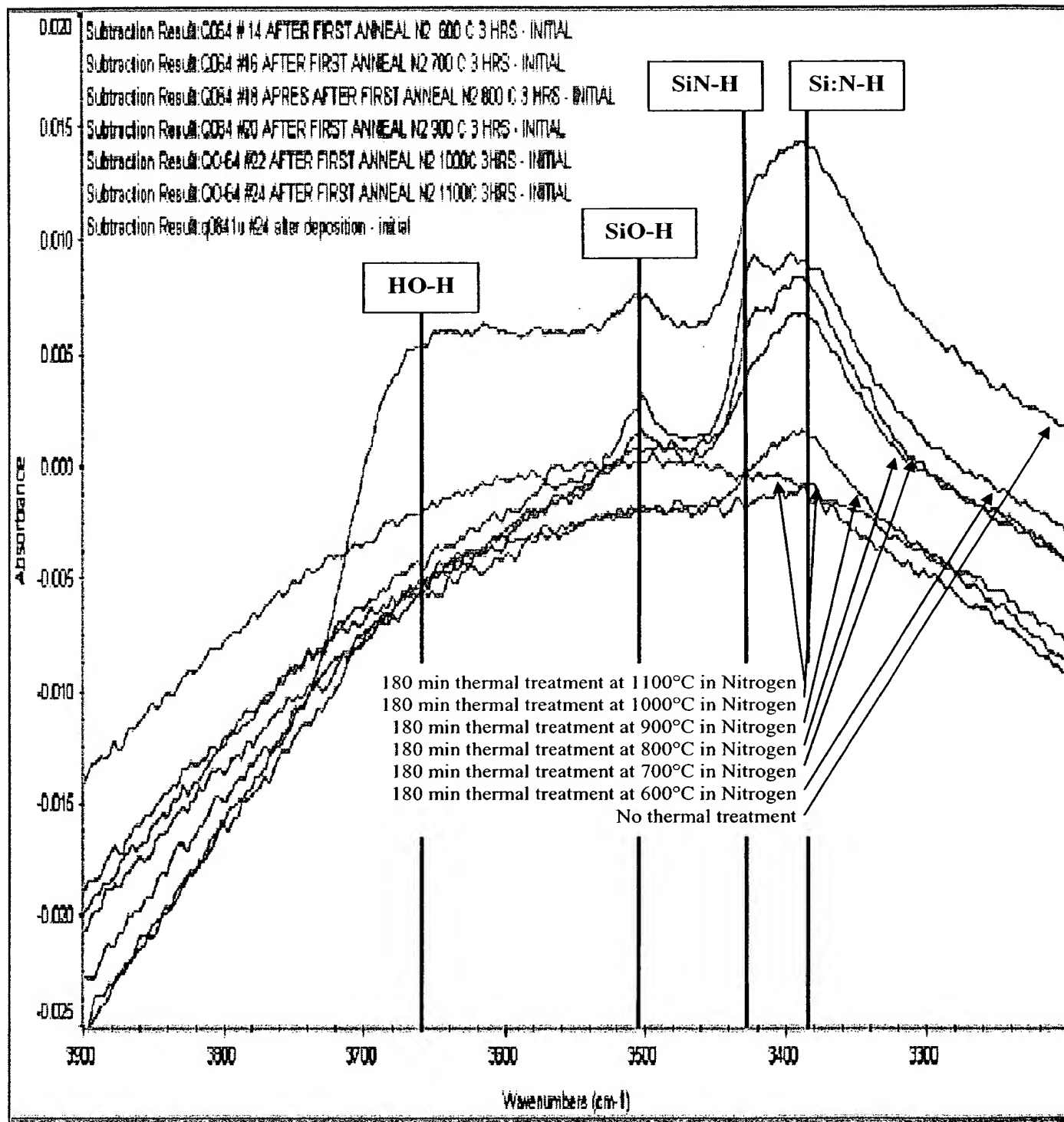
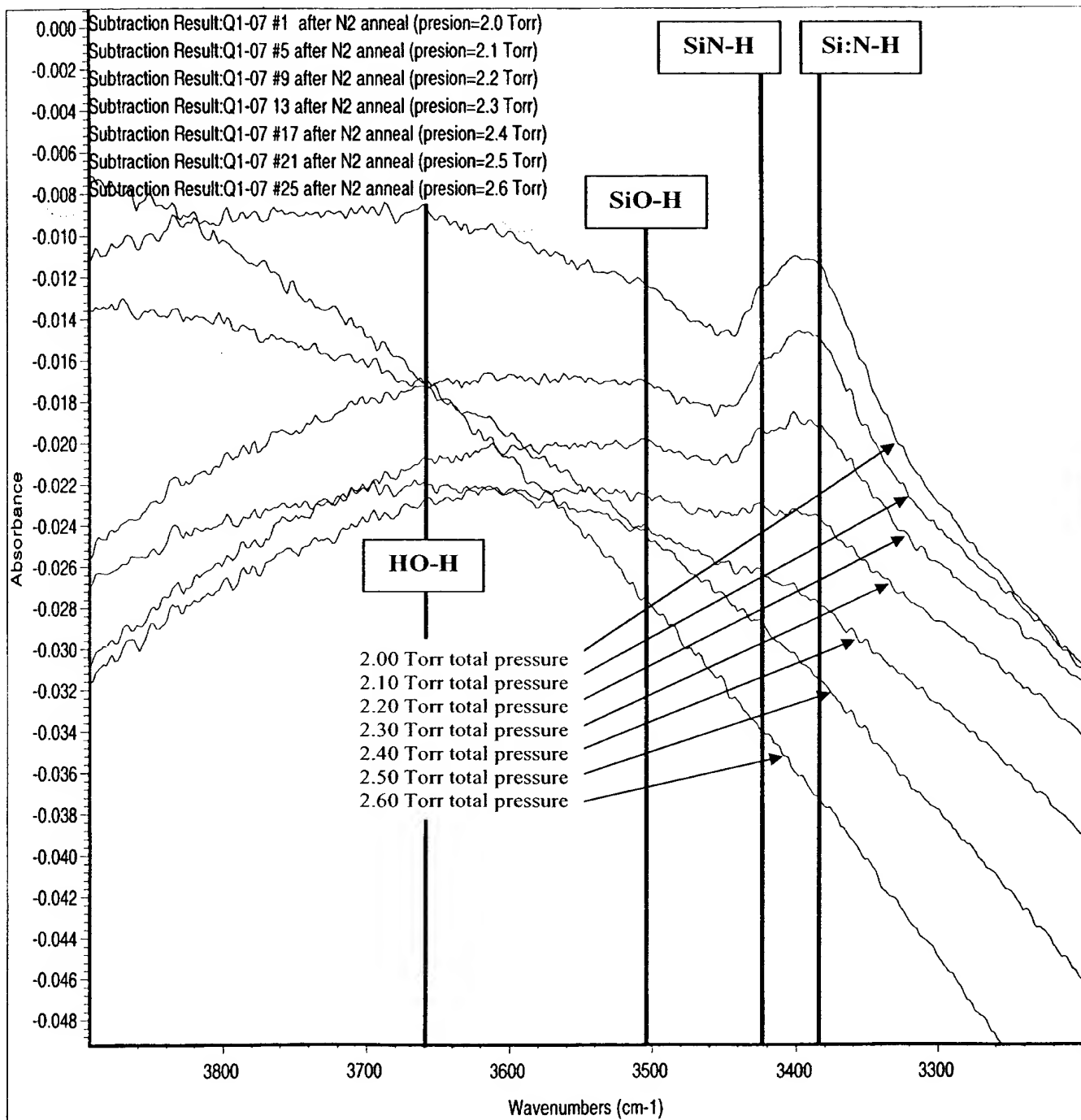


Figure 9b



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Figure 9c

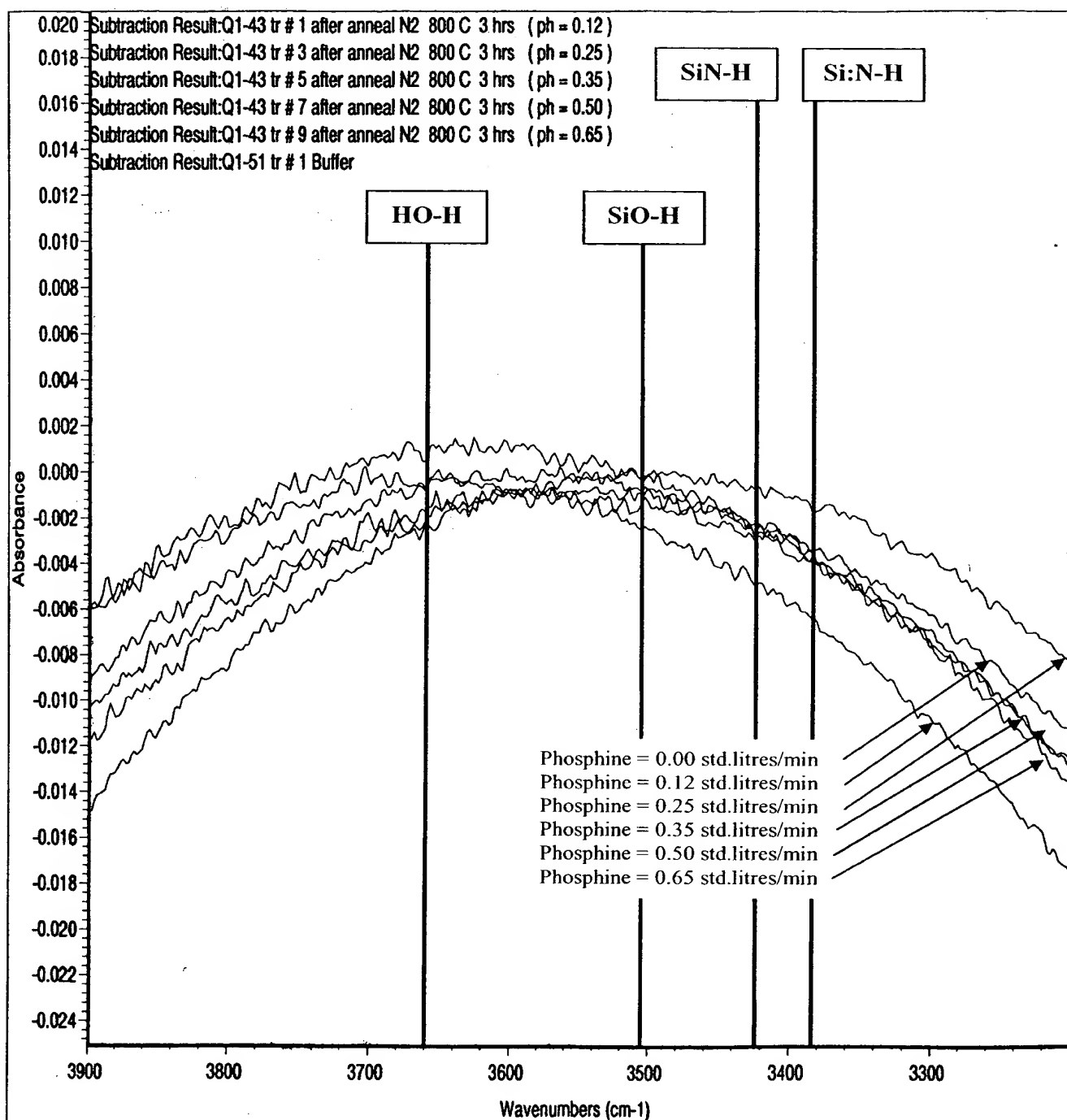


Figure 9d

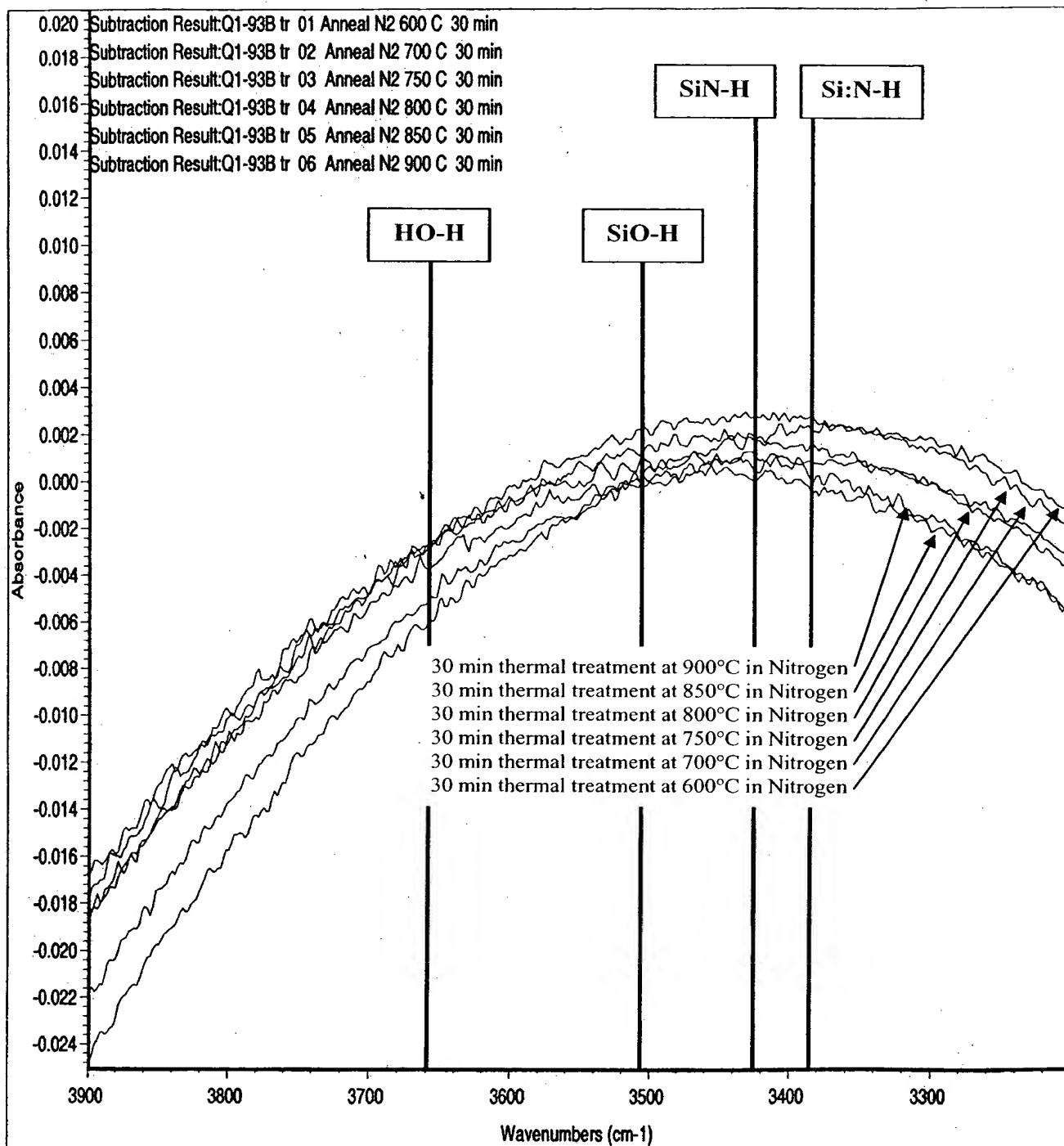


Figure 10

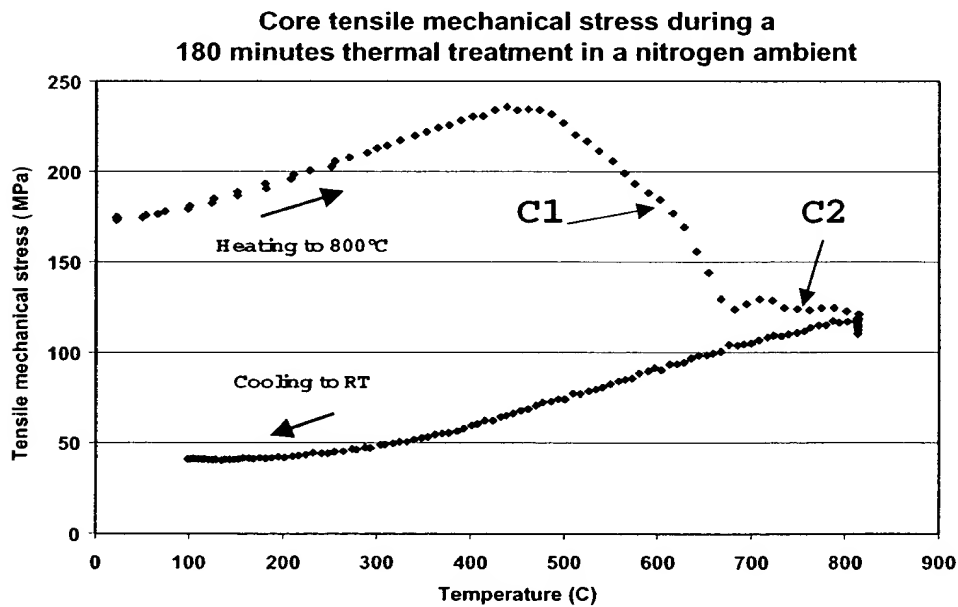
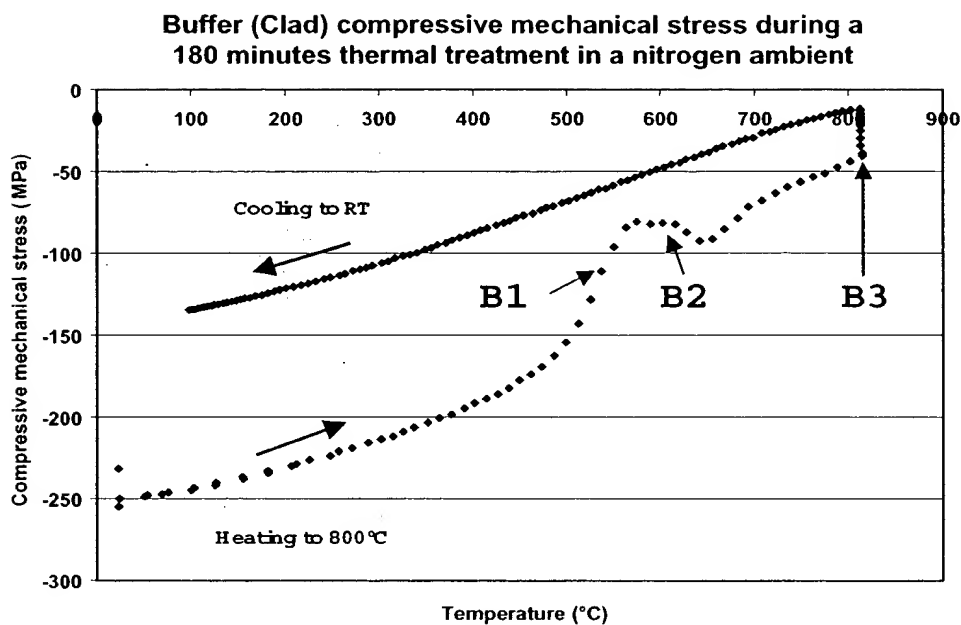


Figure 11

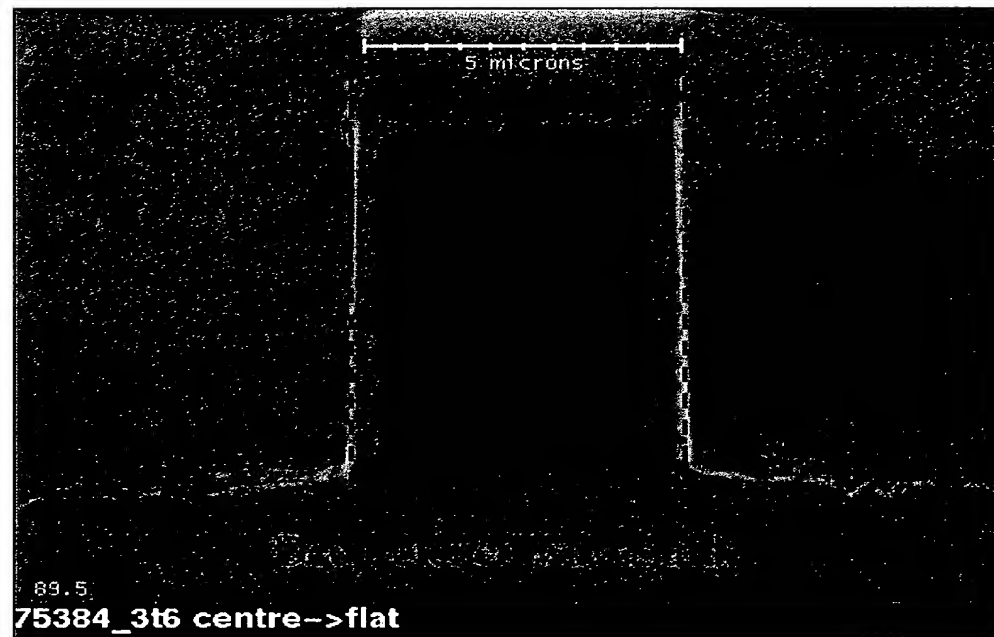
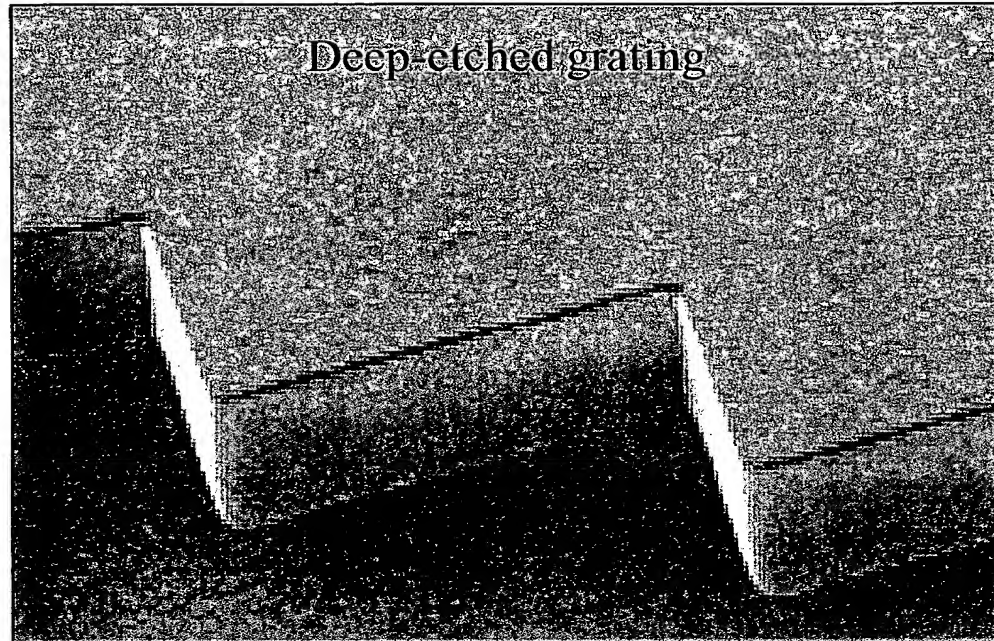
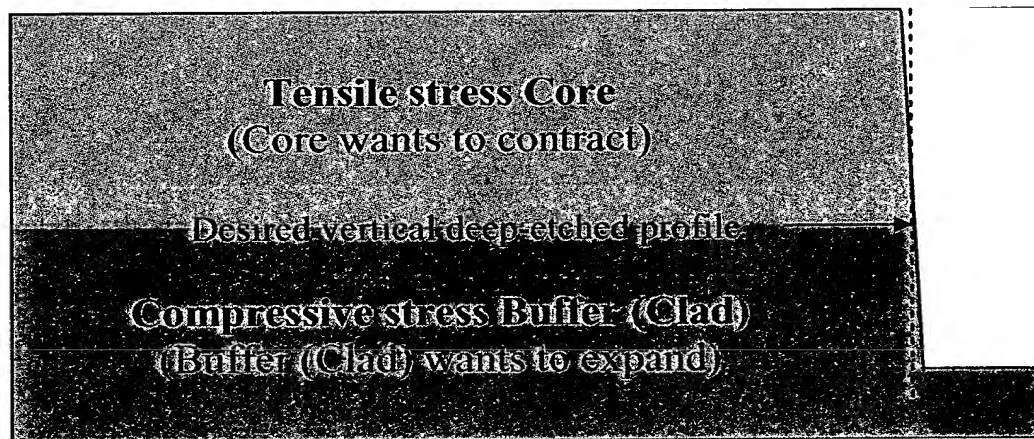
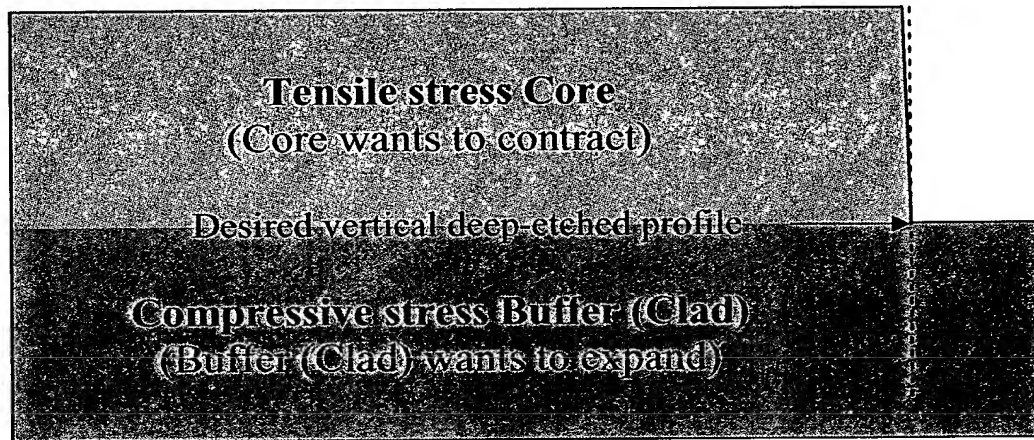
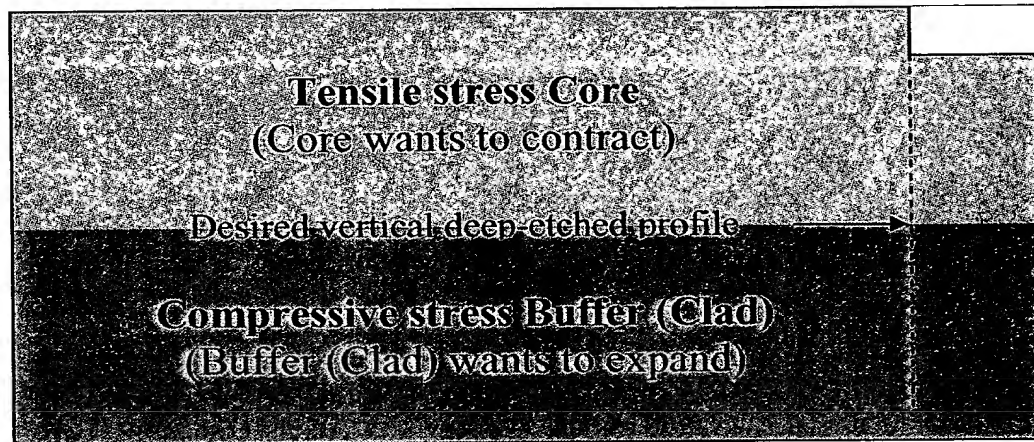
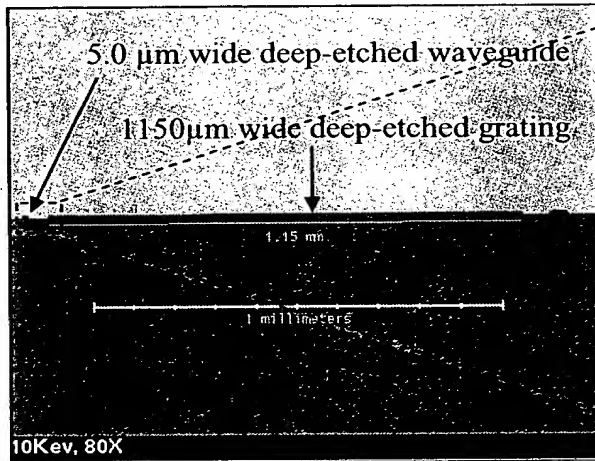


Figure 12

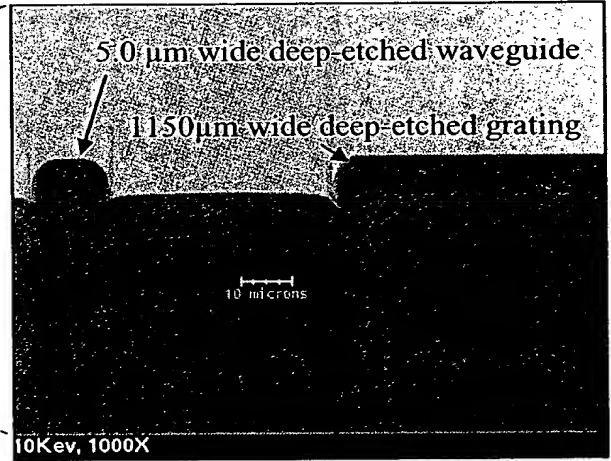


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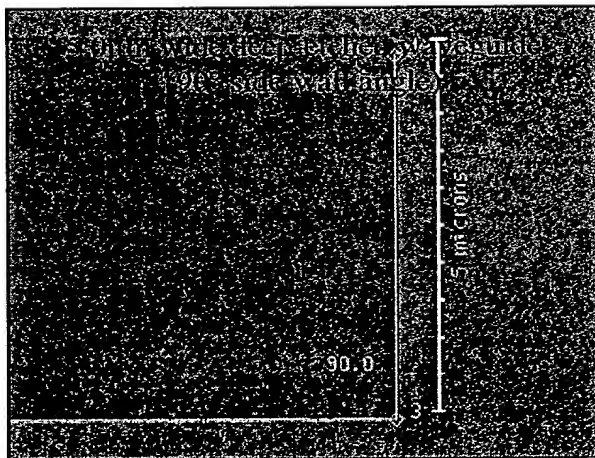
Figure 13



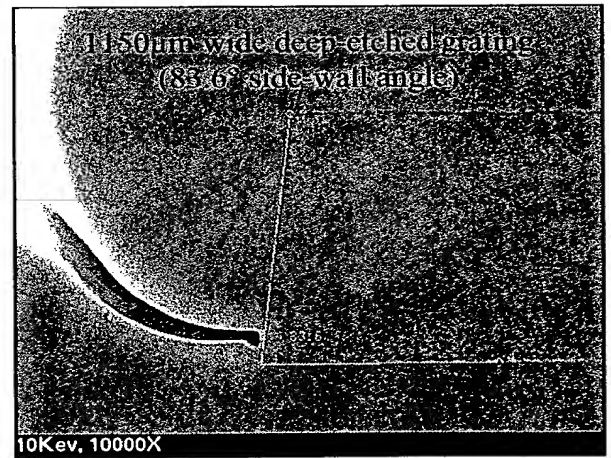
(a)



(b)

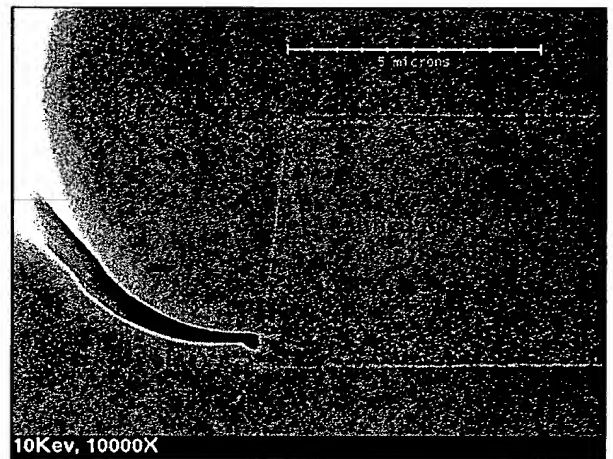
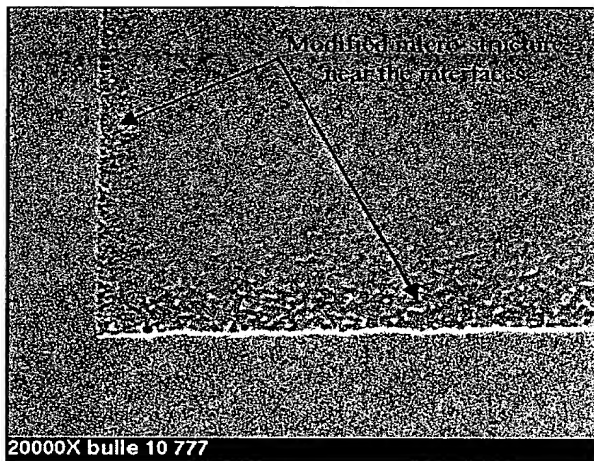
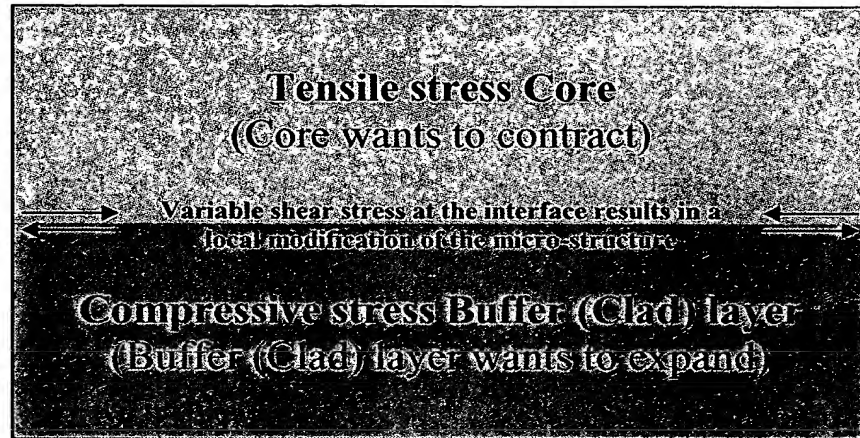


(c)



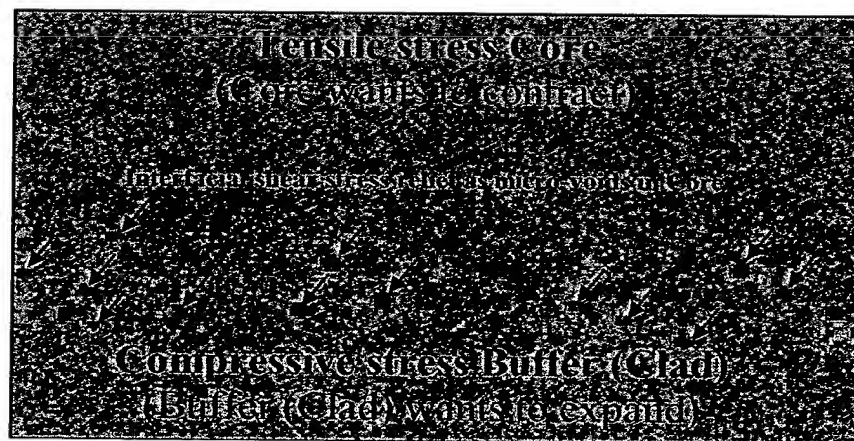
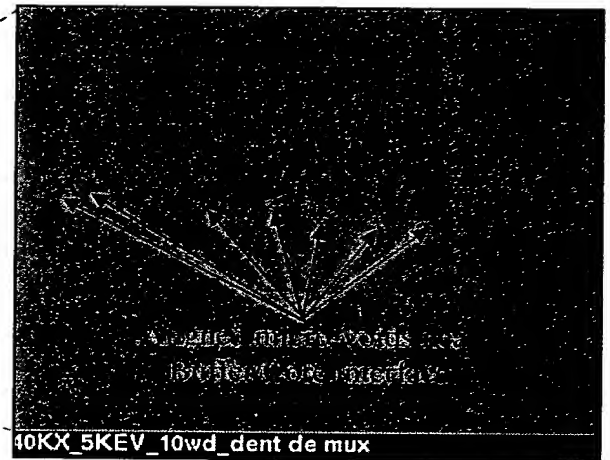
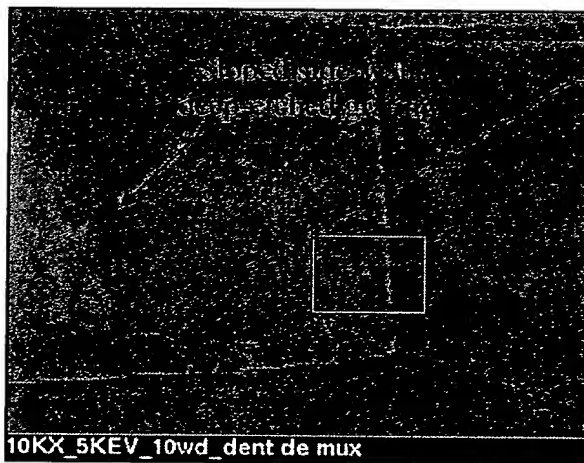
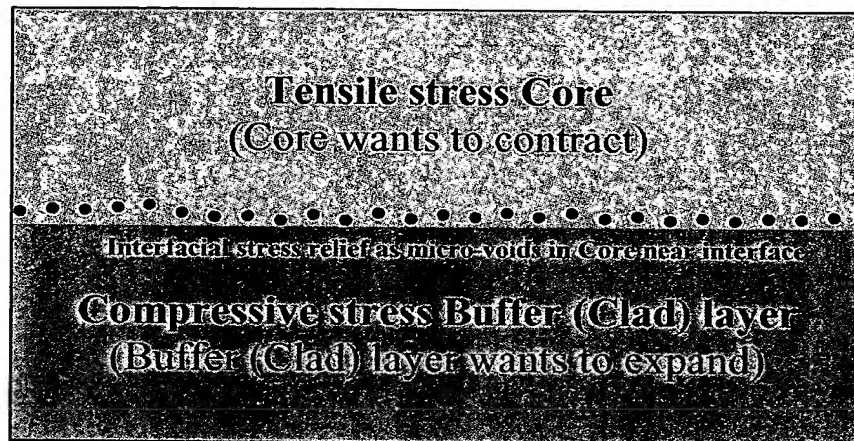
(d)

Figure 14



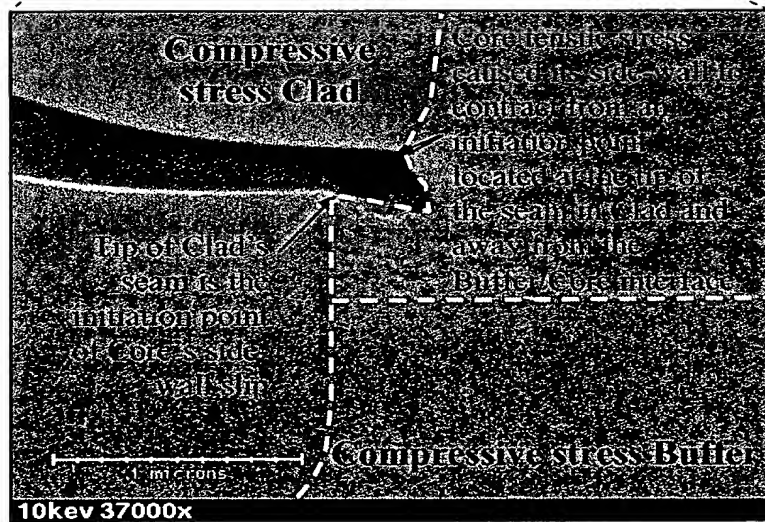
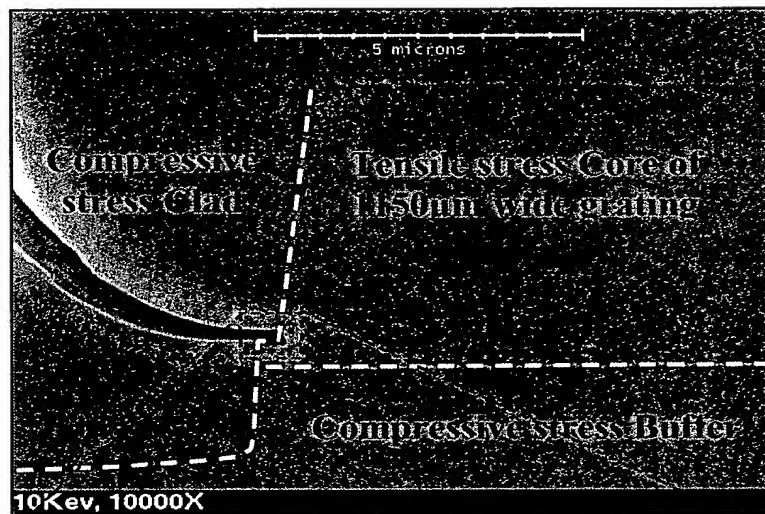
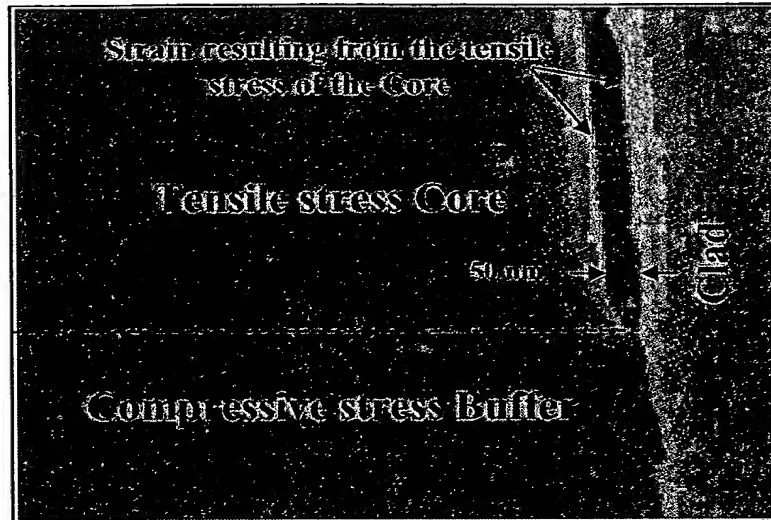
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101260 91695660

Figure 15



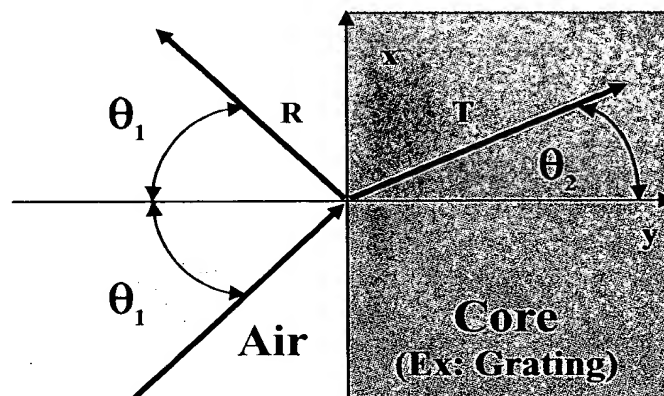
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Figure 16

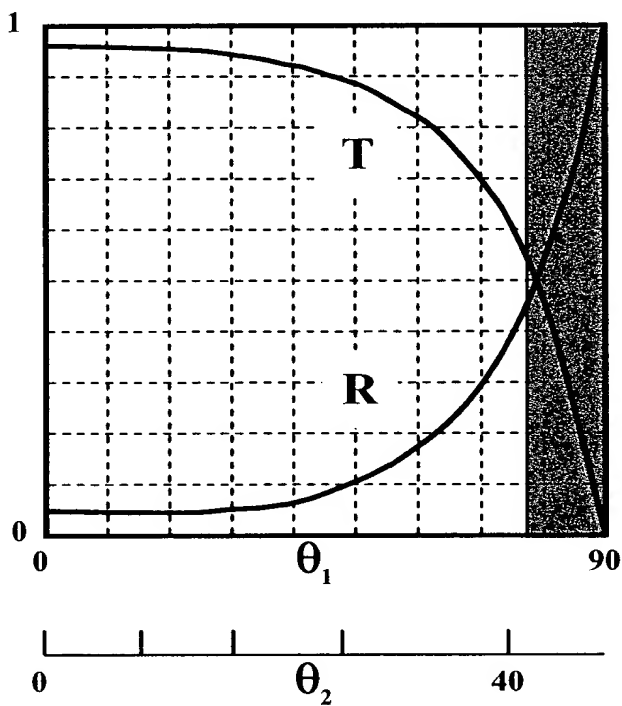


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Figure 17



Electric Field \perp Plane of Incidence



Electric Field \parallel Plane of Incidence

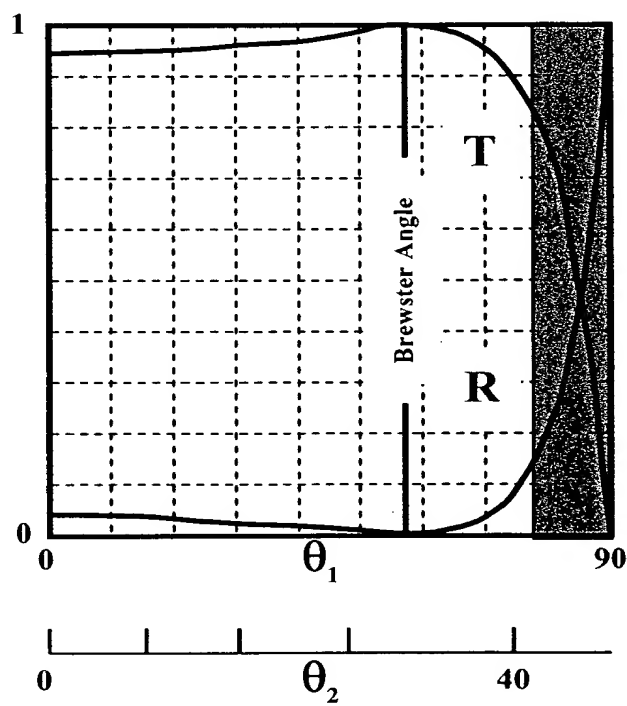
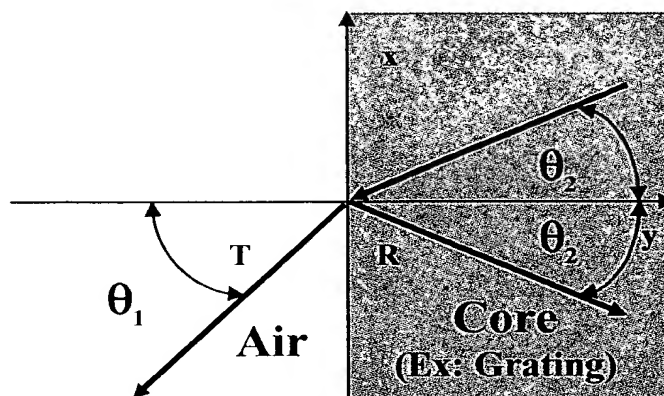
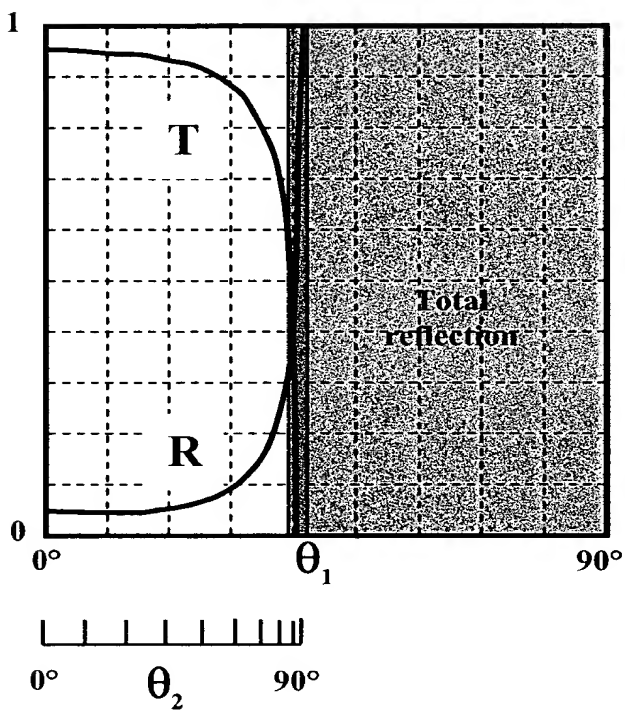


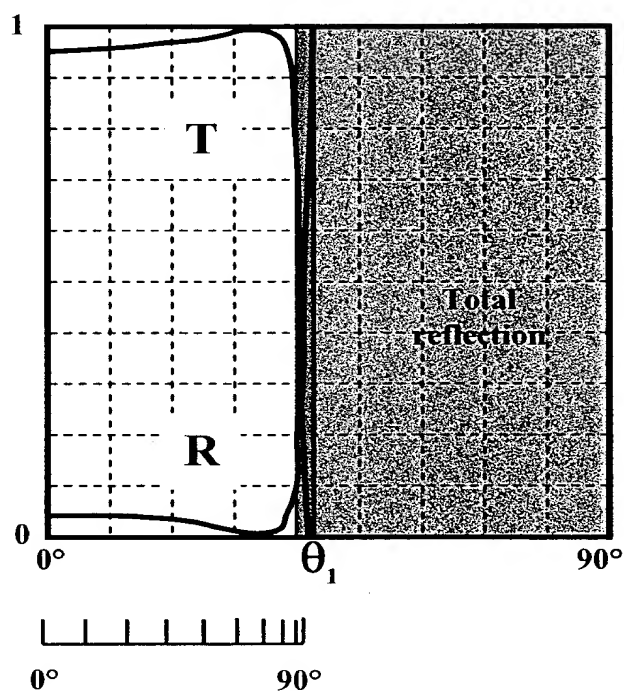
Figure 18



Electric Field \perp Plane of Incidence



Electric Field \parallel Plane of Incidence



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